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## LECTURES
ON
## COMPARATIVE ANATOMY AND ANIMAL PHYSIOLOGY,

DELIVERED BY

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### LECTURE XLIII.

#### ON THE DIGESTIVE ORGANS OF THE MOLLUSCOUS OR CYCLO-GANGLIATED CLASSES.

THE *worm* can twine its body like a serpent round its prey, and tear it with its teeth and suck its blood, and the *insect* can pursue it through the air and vigorously attack it with arms and claws and teeth and sting, so that in the helminthoid and the entomoid articulata, their powers and instruments are oftenest exerted and used against prey higher than themselves in the scale of development, and hence the great development of their organs of relation, compared with those of organic life or of nutrition. But the soft, feeble, and armless molluscous animals, able only to creep slowly along the bottom of the sea, or fixed immovcably to the rocks, and with their sensitive and locomotive organs very imperfectly developed, are less able to select and secure the higher forms of animals as prey, and have their digestive apparatus, therefore, adapted for more varied and coarser food. Their alimentary canal almost never passes straight through their body; nor is the anus terminal, as we saw it in most of the articulata. The digestive cavities are here more numerous and capacious, the intestine is more lengthened and convoluted, and all the assistant glandular organs are developed on a higher plan, and more constant throughout the classes. The magnitude of their biliary, salivary, and often of their pancreatic and other glands, enable them to dispense with the numerous solid instruments of mastication disposed around the mouth of articulated animals, and to digest the lower forms of animal and vegetable matter. Their whole economy being thus adapted for the absorption and the solution of the softer kinds of food, teeth, and other dense instruments, are much more rarely seen in their digestive sacs, than we found them in the entomoid and even the helminthoid classes.

The lowest of the molluscous classes, the *tunicated* animals, shut up in the interior of a cartilaginous, more or less elastic, and biforate tunic, have no prehensile or masticating organs connected with their mouth. The mouth, in fact, is placed at the bottom of the respiratory sac, and appears to be destitute even of those tentacula, appendices, or lips, which are so much developed and so various in their forms in the conchiferous animals. Tentacular filaments are generally disposed around the interior of the orifice leading to the branchial sac. The mouth thus opening, as in this *cynthia canopus* (*Fig.* 155, *d*) at the bottom of the respiratory sac, into which the water is taken for respiration, leads to a narrow short œsophagus, which soon dilates into a stomach (*Fig.* 155, *c*); that stomach, upon being laid open, is found perforated, in most of the tunicata, by numerous wide apertures that lead by short canals into the substance of the liver; these are the apertures of the short hepatic ducts so common in this situation in the molluscous classes, and they are chiefly situate towards the pylbric extremity of the sto-

*Fig.* 155

mach; the pyloric extremity of the stomach is a part in the molluscous classes which is generally involved, in fact, in the substance of the liver, and we can generally detect the distinct separation of lobes, in their conglomerate form, of the liver. The intestine thus escaping from the lobes of the liver, it forms a slight convolution, and ascends to form the anus (*Fig.* 155, *b*) near the anal aperture (*Fig.* 155, *a*) of the exterior tunic, so that currents of water taken in by the branchial vibratile cilia to aërate the branchiæ disposed over the interior of the muscular tunic, leave no chance of conveying the excrementitious matter downwards over the delicate digestive and generative apparatus placed below the sac. The intestine, for the more easy escape of its excrementitious contents, is prolonged as near as possible to the anal aperture (*Fig.* 155, *a*) of the branchial tunic. The oral orifice (*Fig.* 155, *f*) is generally larger. Thus the streams of water issuing from this anal orifice of the respiratory cavity, convey all the excrementitious deposits clear from the interior of that cavity. The same structure of the digestive apparatus is found in the other simple tunicata, the position of the internal parts of these animals varying only slightly with the differences of outward form. The simple structure of the mouth, its secluded position, and its want of prehensile organs, and organs of sense, and salivary glands, show that these animals are adapted only to seize the simplest forms of organized substances brought into contact with the mouth by the respiratory currents. Their simple membranous perforated stomach is often marked by longitudinal plicæ; and the short and simple intestine, with generally but one convolution, is destitute of enlargements or cæca, and presents a glandular appearance. The rectum generally projects loose into the base of the anal orifice of the cartilaginous tunic, and is often lobed or fimbriated or valvular at its termination, as we see likewise in the cephalopods.

In the compound forms of this class, where numerous respiratory orifices are disposed in a circular order around the larger central vent, as in the *botryllus*, we still observe each provided with its distinct alimentary apparatus, as in the detached and independent species. These masses of individuals, aggregated together in regular families, spread over the surface of all kinds of submarine bodies, like alcyonia or other fleshy soft zoophytes with which they used to be confounded. The *pyrosoma* (*Fig. U* 2, Vol. I. p. 426), so remarkable for its proteus-like mutability of colour, and for its luminosity in tropical seas, is composed of numerous individuals aggregated closely together, and extending their branchial orifices outwards from the sides of the tube which they compose. The prominent papillæ (*Fig.* 156, *b*, *d*), which cover the surface of the tube, form each the oral extremity of a distinct animal, which extends inwards to the interior of the general tube, where all the anal orifices (*Fig.* 156, *c*, *f*) terminate. When we magnify these minute animals (*Fig.* 156) of the *pyrosoma*, we observe that they possess each a distinct, nervous, digestive, circulating, respiratory, and generative system, formed on the same plan with those of the larger detached *ascidiæ*. The outer extremity (*Fig.* 156, *b*, *d*,) of each papilla is a closed portion of the exterior tunic, but near that extremity you observe a small round simple orifice (*Fig.* 156, *a*, *e*), which leads by a neck of variable length to the branchial sac, on the sides of which are disposed the reticulate ciliated gills. On opening this respiratory sac, we find at its lower part a small orifice, which is the mouth, leading to a little round stomach. The œsophagus is small but distinct, the stomach is provided with a liver, and the intestine forms one convolution before it terminates near the anal orifice of the sac. On opening the general tube of the entire *pyrosoma*, and looking upon its inner surface, we see the numerous orifices, not of the intestines of the several animals, but of the vents by which the streams of water, brought in through the outer oral orifices, are conveyed into the general cavity of this animated tube, and by which streams of water the entire body (the tube being closed at one end) is raised upwards from the bottom, and made to swim like a luminous column through the dark and still sea. It is remarkable to observe in those tunicated animals, or naked acephalous mollusca, so complicated a structure, and on so high a plan, and yet find them so helpless in the means of selecting and obtaining food. The dark-coloured digested matter seen in their intestine is flocculent, like that of the oyster and other bivalved acephala, without solid parts to indicate the kind of food, but entomostraceous crustacea, which are excluded from no situation under the surface of the sea, are found occasionally lying in their respiratory sac, and may form part of their food.

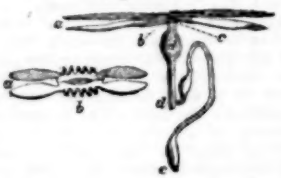
*Fig.* 156

In the *conchifera*, or the inhabitants of bivalve shells, we observe a structure of the alimentary canal very closely resembling

that of the tunicated animals, though generally longer and more convoluted. At the bottom of the respiratory sac we observe the mouth of these animals leading to a short œsophagus. The mouth is here provided with two pairs of long, compressed, lateral, striated, tapering tentacula, and is placed at the most remote part of the cavity of the mantle from the greatest opening of the valves or the branchial orifice. The mouth, destitute in the conchiferous animals of mandibles or maxillæ or any solid teeth, opens, as in tunicated animals, almost directly into the cavity of the stomach, by a very short œsophagus. The stomach is surrounded by the lobes of the liver, which is remarkable for its development and conglomerate form in all the classes of molluscous animals, even up to the cephalopods. On opening the stomach of the common muscle, or other bivalved animal, we observe numerous large apertures at its pyloric extremity, which are the orifices of wide ducts leading into the cavity of the liver. The lobes of the liver, in fact, consist only of an aggregate of small ramified cæca, which unite into trunks, larger and larger, and those orifices are but the general terminations of the ramified ducts in the pyloric portion of the stomach. Thus the liver is obviously a development of this part of the intestine itself, which is becoming more and more complex, and more concentrated and isolated as we ascend to higher forms of organization. What we see here, and, still more obviously in the tunicata, of the development of the liver, is the process which nature follows in the origin and development of all glands in every class of animals. From the stomach we observe the intestine to perform often several convolutions, so as to retain as long as possible the mixed and inferior kind of food which is brought into the branchial cavity by the currents of water in the act of respiration, for neither the mouth nor any other part of the digestive apparatus is capable of extending beyond the respiratory cavity in the conchiferous animals, so as to give them any power of selecting their food; they can only seize what the bounty of the waves brings into contact with the mouth in the interior of this respiratory cavity, and the simplest polypus of the simplest zoophytes can do as much. After performing several convolutions surrounded by and almost imbedded in the liver, (and it is probable that the connexion which thus exists between a considerable part of the intestinal canal and the liver may be subservient to the further elaboration of the food,) we generally observe it forming a curve along the convex dorsal margin of the shell, within the mantle, and terminating at a short distance before it arrives at that upper anal orifice from which the streams of water, produced by the vibratile cilia, are observed incessantly to rush during respiration. The water is driven in through the inferior respiratory orifice by the rapid action of the cilia disposed upon the gills and mantle, but it is propelled outwards through this anal orifice of the muscle with a smooth and incessant regular current, which assists, as in the tunicata and even higher mollusca, in conveying away all excrementitious discharges from the interior of the mantle.

In the alimentary canal of the *pinna nobilis* (*Fig.* 157, *A*), figured by Poli, you observe the upper and the lower lips (*Fig.* 157, *a*) extended and tapering on each side to form a pair of lateral compressed thick pectinated tentacula. Between the middle of these lips is seen the simple orifice of the mouth (*Fig.* 157, *b*), leading by a short œsophagus (*Fig.* 157, *c*) to a stomach (*Fig.* 157, *d d*) of unusual length. The upper or cardiac portion of the stomach forms a globular sac, and the pyloric part, which is long, narrow, straight, and cylindrical, forms a small cæcum at its lower extremity. A distinct pyloric valve is found formed by a circular fold of the mucous coat at the junction of the pyloric extremity of the stomach with the small intestine. The stomach in this large animal has a very obvious and thick muscular coat, and is perforated with large openings for the short hepatic ducts. The intestine presents an enlargement of considerable size in its duodenal portion, and a similar dilatation in the colon (*Fig.* 157, *e*). The colon of the conchifera generally pierces the ventricle of the heart, and passes longitudinally through its cavity. I have generally found this part of the intestine, and that which is covered by the liver, charged with food, while the rest of the alimentary canal was empty. The stomach of the muscle is most frequently found filled with mucus and sand, or mud, as if they strained the agitated waters of all their turbid contents. In the *mactra*, the bile enters the

*Fig.* 157



stomach by a single large duct, and the component cæca or follicles of the liver are very distinct; indeed, in most of the conchifera, these minute cæca which compose the lobes of the liver are obvious when we observe a portion floating loosely in water or spirit. The convolutions of the intestine are chiefly placed between the back part of the liver and the fore part of the ovary, and they are generally embraced by the expanded base of the muscular foot, which forms thus a kind of hollow abdominal cavity. In the *solen strigilatus* the colon traverses not only the ventricle of the heart, but also a part of the cavity, both of the anterior and posterior aortæ, which issue from that ventricle. In the *mya pictorum* the colon passes through the middle of the anterior aorta into the ventricle, but immediately escapes through the parietes of that cavity, and follows along its exterior; it again pierces the posterior extremity of the lengthened ventricle, to arrive at its interior, and continues for some distance through the interior cavity of the posterior aorta. In most of the conchifera there is a firm, transparent, stiliform, crystalline body, enclosed in a cæcal prolongation of the intestine which opens into the stomach. This stiliform body is of a cartilaginous consistence, with a tricuspid free extremity, and is composed of several concentric layers or laminæ. It extends into the stomach, and perhaps assists in the imperfect mastication of these animals, like the corresponding firm stiliform organs, so common in the proboscis of the gasteropods. The prolonged lips, which from their pectinated appearance on part of their surface have been considered as assistant respiratory organs, vary much in their forms in the different species of this class, and lead, by their modifications, to the fimbriated arms of the brachiopodous conchifera. In the *spondylus* (*Fig.* 157, *B*) the pectinated tentacular parts of the lips (*Fig.* 157, *B*, *a*) are short and broad, and thicker in their middle than at either end; and their proximal part, which immediately surrounds the mouth (*Fig.* 157, *B*, *b*), is divided into numerous pedunculated lobes, the margins of which are surrounded by numerous minute fimbriæ, or filaments, of a bright-red colour. The margins of the mantle have their fimbriæ distinctly ciliated in many of the conchifera, and thus assist in directing the current of water containing food, into the cavity of the respiratory sac. The margins of the mantle in the *spondylus* present numerous distinct eyes, as in the *pecten*, which are often raised on little peduncles, like those of a gasteropod; they are large in the *ostrea jacobæa* around the margin of the mantle. In the common oyster, the *ostrea edulis*, the mouth, provided with four large thick tentacular extensions of the lips, opens almost directly into a globular stomach, perforated by the large hepatic ducts, and the intestine, covered by a large liver and a large ovary, is comparatively short, as in most of the fixed conchifera, and terminates, without perforating the heart, in the anus, immediately behind the posterior part of the great adductor muscle of the valves.

In the numerous and greatly diversified class of *gasteropods* we observe a higher condition of the digestive apparatus, as of most of the other parts of their economy. It is likewise more varied than in the acephalous mollusca in its form and character, for many of those animals, as the snails, feed on the higher terrestrial vegetable substances, others on the lowest kind of vegetables—the fuci that grow in such abundance at the bottom of the sea; many others, again, we see destroying animals, and feeding upon living prey. Most of the timid, defenceless, blind, and naked gasteropods, as the *doris*, *eolis*, *tritonia*, *scyllæa*, are animals that feed on vegetable substances, which they have generally the means of bruising betwixt lateral horny jaws; or sometimes they abrade that vegetable food, by recurved spines placed in regular series along the tongue, as in the *patella*.

We have here a common form of the alimentary canal in the *doris*. The mouth, provided with a short proboscis, is destitute of jaws; the head is provided at its lower part with two expanded tentacula, and at the upper part of the mantle, at its anterior extremity, with two more sheathed claviform tentacula. Here there are no organs of vision; and few of the naked gasteropods present those organs. The proboscis is highly retractile, muscular, and strong. There are both cæcal and conglomerate salivary glands. The œsophagus passes down a little tortuous to the anterior part of the abdomen, and dilates into a stomach, capacious, thin, wide, and capable of receiving a large portion of the vegetable substances on which the doris feeds. Upon opening the cavity of the stomach, we see here, as in the tunicated animals, and in the inhabitants of bivalve shells, the large perforations leading from the cavity into the substance of the liver. Here again we observe the short wide hepatic ducts, bearing the same general character which they have from the lowest of the mollusca up to the class of fishes. Baron Cuvier remarks, that it is surprising the vegetable food does not gain admission from the sto-

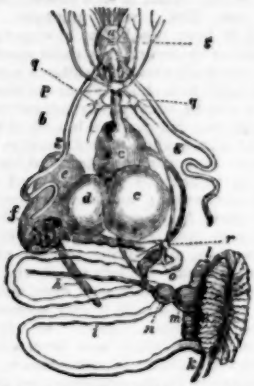
mach into the cavities and substance of the liver. I have collected many of those animals upon our coasts, and have opened them in all conditions as regards food taken into their stomach, and I have found the stomach often completely filled with minutely divided portions of coarse marine plants; but I never found them with their stomach thus filled, without finding that the hepatic ducts were also filled with the food. These hepatic ducts are, obviously, continuations developed from the stomach itself, and the obliquity of their entrance does not protect them from the ingress of the food. We observe opening also into the stomach of the *doris*, which is destitute of teeth, a glandular cæcum of a pyriform shape. That glandular cæcum differs obviously in its structure and form from the structure of the liver. It consists of a single wide cavity, studded internally with minute glandular orifices or follicles. It opens into the pyloric extremity of the stomach, and, consequently, pours its secretion into the alimentary canal at the same place with the liver. From this position of the organ, and this termination of its duct, we cannot consider it as analogous to the salivary glands. From its position in the vicinity of the hepatic organ, it is rather analogous to the pancreas in higher animals. This I was more anxious to examine on account of its having been stated by CUVIER and by many other writers, that no invertebrated animals possess a pancreas. TIEDEMANN has adopted my view of this gland, MECKEL in his last work was inclined to do the same, but CUVIER continued to regard it as a peculiar organ. This form of the pancreas exists also in the *aplysia* and some other gasteropods, and I have also shown that under a more complicated form that organ exists in the cephalopods. Now it is known to be developed likewise in the articulated classes of animals, and we see it there in the simple form of a secreting follicle or glandular cæcum.

The intestine, then, forms several turns in the doris, wide and capacious, and terminates at length at the posterior and superior part of the body, surrounded by the branched and tufted respiratory organs. Before it opens upon the surface of the body, the intestine here perforates the auricle of the heart; and it appears at first a remarkable position of the rectum, that it should here pass through the heart. But when we examine the position of that organ in the doris, we perceive that it is obviously in the best possible position, and that it must indeed necessarily perforate this auricle. There is but one aperture on the whole of the back part of the mantle, and which opening is chiefly disposed from the large ramified respiratory organs. The anus, without requiring another solution of continuity in the mantle, opens in the middle of that general, branchial, contractile, wide aperture. The mantle is here capable of closing firmly by a sphincter around this whole aperture, and of expanding widely to allow a passage to the large branchiæ. Those respiratory organs consist chiefly of ramifications of the branchial arteries and branchial veins covered with a thin fold of the skin over all their branches, and into which the blood is incessantly propelled and conveyed backwards; and the terminations of all those branchial veins form thus a continuous circular passage, or dilated venous sinus, around the margin of the general aperture through which the gills, the hepatic excrementitious duct, and the anus, pass. The anus is only surrounded by the continuous reservoir of all the branchial veins, which here form a circular sinus or auricle; it passes through the only aperture on the posterior part of the mantle, and there is thus an approach to the perforated condition of the heart so common in the conchiferous animals. There is an organ here, like the ink-gland of the octopus, imbedded in the liver, and which sends its duct to terminate on the surface of the body, close to the opening of the anus, a position in which we should expect the first development of urinary glands; it forms a small sac on its duct like a urinary bladder.

In the *patella* or limpet, which likewise feeds on marine plants, we observe the mouth provided with a very long narrow tongue, much longer than the body, and presenting throughout its whole extent transverse rows of recurved sharp horny spines for filing down the coarse kind of vegetable food. The œsophagus is long, wide, and sacculated, the stomach capacious, lengthened, and placed transversely, with its cardiac and pyloric openings terminal; and the intestine, long, and convoluted through the mass of a large liver, terminates in a dilated rectum which opens on the right side of the neck, the most frequent position of the anus in the gasteropods, and the most convenient in all the inhabitants of univalve spiral shells. In the *tritonia* there are two lateral, horny, sharp, curved jaws, articulated together, and moved by very powerful enveloping muscles. The œsophagus, striated longitudinally on its inner surface and very wide, leads to a small membranous stomach covered over with the lobes of the liver, and the intestine, after a very short course, terminates on the right side of the body, behind the genital opening.

In the *aplysia* (*Fig.* 158) we observe another complex form of the alimentary

*Fig.* 158



canal in an animal which feeds chiefly on marine plants, like the doris. The lips are supported by two cartilaginous laminæ, and the tongue is covered with teeth. The œsophagus (*Fig.* 158, *b*) passes narrow from the great muscular apparatus of the mouth (*Fig.* 158, *a*) through the double ring of œsophageal ganglia (*Fig.* 158, *p q q*), and dilates into a large membranous crop or curved sac (*Fig.* 158, *c c*), capable of holding a considerable quantity of vegetable matter, and generally filled with pieces of fuci. This first curved stomach, or crop, near to its termination, has its lower aperture on the side, which leads into the second stomach or gizzard (*Fig.* 158, *d*), smaller than the first considerably, and smaller than the third stomach (*Fig.* 158, *e f*). This second stomach is provided internally with broad flat teeth, consisting of a horny substance and of rhomboidal shape, serving to compress the vegetable food, and the third stomach has teeth of another form, consisting of recurved sharp conical spines capable of piercing the food for the ingress of the fluids, and of subdividing it even into smaller portions. This third stomach, on being opened, shows at its pyloric extremity the numerous perforations for the hepatic ducts (*Fig.* 158, *f*). Close also to these openings of the hepatic ducts, we observe in this *aplysia*, or sea-hare, common on our coasts, a glandular organ (*Fig.* 158, *h*), consisting of a single long cæcum nearly cylindrical in its form. That cæcum is of a distinct glandular nature, like the corresponding organ of the *doris*, and opens, like that of the doris, into the same pyloric part of the stomach into which the bile is poured by the liver; obviously, therefore, this appears to be the rudimentary molluscous condition of the pancreatic gland. From this third stomach the intestine (*Fig.* 158, *i i*) performs several convolutions, surrounded by the lobes of the liver, and terminates at length in the anus on the right side of the body immediately behind the gills, near to which you observe the auricle (*Fig.* 158, *m*) and the ventricle (*Fig.* 158, *n*), leading to the vesicular part of the aorta (*Fig.* 158, *o*), before which the great splanchnic ganglion (*Fig.* 158, *r*) is found attached to that great arterial trunk.

The proboscidian gasteropods, armed with an exterior complete shield, in form of a spiral univalve shell, are for the most part carnivorous, and present generally a long œsophagus, a short and narrow alimentary canal, with few convolutions, and at the end of the [illegible] are two strong lips, covered [illegible] teeth (*Fig.* 133, *a*, Vol. II. p. [illegible] lips are supported by two [illegible] form, cartilaginous bodies, [illegible] talline stiliform body we [illegible] in a sac opening into the [illegible] the conchifera, and which [illegible] dered as intended to close [illegible] the hepatic ducts in the conc[illegible] bile was not wanted in their sto[illegible] we see almost all the important vi[illegible] cerned in digestion, not only d[illegible] and constant in the gasteropods; bu[illegible] of these glands, here of great size, exh[illegible] as a normal form, that conglomerate structure which marks a higher condition of development in all glandular organs.

Few of the *pteropodous* animals have been examined anatomically, but in the *clio borealis*, which belongs to this class, and in others in which the digestive apparatus has been examined, we observe in all its parts a considerable resemblance to that of the inferior gasteropods, and even to that of the inhabitants of bivalve shells. In this *clio* there are no teeth in the fleshy triangular mouth, and the œsophagus passes long and narrow through the ordinary circular œsophageal chain of ganglia. It dilates into a stomach of considerable length and width, thin, membranous, and perforated. From this long enveloped stomach, the short intestine passes upwards in a curved form, to terminate at the left side of the neck near to its anterior part under the left gill, where it must here terminate, on account of there being no anterior median canal or funnel, and the mantle being entirely closed above in these *pteropodous* animals. The stomach is surrounded here, as in the gasteropods and in the conchiferous animals, and to a considerable extent in the trun-

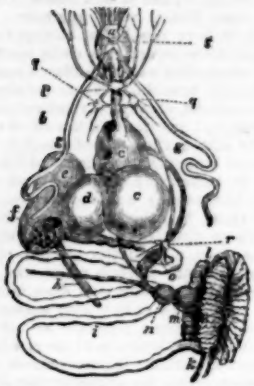
cated animals, by the lobes of the liver, which pour their secretion into the cavity of the stomach through short wide ducts. In the *cimbulia* there are horny teeth in the stomach, as in some of the gasteropods. The simple unarmed mouth of the *hyalea* opens into a lengthened narrow œsophagus, which leads to a small crop and gizzard, both strong, and, internally, longitudinally plicated. The long, narrow, and equal intestine has its convolutions covered with the lobes of the liver, and ascends to terminate on the right side of the neck.

The digestive organs of the *cephalopods* are those of carnivorous mollusca, well armed to attack their prey at the bottom of the sea, but ill protected with exterior ...erings. They present the most ele... and complex form of the mollus..., which in many parts approaches ...t to the forms of the parts met ... vertebrata. They are pro... very powerful curved horny ...th sharp cutting edges, and ...ose of a bird or of the tor... ...g of a sharp pointed lower ... extends forward and curves ... lengthened than the upper ...he upper mandible is a ... stronger bill. Those horny ...f the naked cephalopods are ... very powerful muscles, and ... externally by fleshy circular lips. ...ave sharp cutting edges, and are of ...ry dense, horny texture in the naked cephalopods, but in the nautilus they are strengthened by a deposition of the carbonate of lime, and in place of the usual sharp cutting ridges they are there more obtuse, presenting broader tuberculated surfaces for breaking and masticating the food that is placed between them. The tongue of the cephalopods is short and fleshy. It is covered over its surface with recurved, sharp, horny spines, placed in beautiful transverse series, as seen in this preparation of the common *sepia*. This form of mandibles is a structure which is common in the classes of reptiles and birds, but is rarely developed in the lower vertebrata. We see that structure of spines, however, covering the tongue, which is already common in molluscous classes; and the common limpet has its tongue covered over, an organ in it three times as long as the body, generally coiled up, and covered over with three longitudinal rows of those recurved spines, by which the vegetable food of the limpet can be more easily filed to pieces. They serve to seize as well as to abrade the food in the cephalopods.

Poured into the back part of the mouth, at the base of the fleshy tongue, we observe the secretion of the two pairs of conglomerate salivary glands, by means of ducts which come from an upper smaller pair, and a lower much larger pair. The larger lower pair of salivary glands are placed at the upper and back part of the liver; they send out two ducts, which continue separate to a considerable distance, and then unite to ascend to the mouth as one duct, as you see them preserved in this preparation of the *sepia*. The œsophagus passes for a short distance narrow, and then enlarges to form a crop. Sometimes we observe that enlargement to continue for a short extent in the cephalopods; at other times it continues on along the back part and right side of the liver to near its termination in the gizzard. This crop you observe in the nautilus, as in most of the naked cephalopods, to be provided internally with numerous longitudinal plicæ—plicæ of the mucous coat, extending inwards so as much to increase the extent of internal surface. It consists of very thin glandular parietes, where we observe the means of great distention. At the lower part of the crop, the œsophagus opens into the muscular gizzard on the right side and dorsal part of the body, and below the middle of the cavity of the mantle. This muscular gizzard is provided with very strong, thick, muscular parietes, as in a crocodile or in a gallinaceous bird; those strong parietes, consequently, require that the internal coat of the gizzard should have a proportional strength, otherwise by their strength they would injure the internal lining coat. We observe that those animals are predaceous—that they feed chiefly on testaceous and crustaceous animals, for which those horny bills and strong muscular arms, provided with suckers, are well adapted. Those animals are taken into this muscular gizzard frequently, along with particles of sand, gravel, and other hard substances, which I have found in this cavity with the food, and this enables us to account for the abraded appearance presented by those fragments of the shells of testaceous mollusca and crustaceous animals which we generally see in this muscular gizzard. This muscular gizzard, therefore, is provided internally with a very strong hard coriaceous lining, like that which we see in the gizzard of many graminivorous birds. The gizzard, a short time after death, allows the coriaceous inner lining to become loose and detached; and frequently on opening this stomach you are apt to lose that coriaceous internal almost horny epidermic lining, on removing the contents of the stomach, and not to observe that useful part of the structure, thus approaching these cepha-

In the *aplysia* (*Fig.* 158) we observe another complex form of the alimentary

*Fig.* 158



canal in an animal which feeds chiefly on marine plants, like the doris. The lips are supported by two cartilaginous laminæ, and the tongue is covered with teeth. The œsophagus (*Fig.* 158, *b*) passes narrow from the great muscular apparatus of the mouth (*Fig.* 158, *a*) through the double ring of œsophageal ganglia (*Fig.* 158, *p q q*), and dilates into a large membranous crop or curved sac (*Fig.* 158, *c c*), capable of holding a considerable quantity of vegetable matter, and generally filled with pieces of fuci. This first curved stomach, or crop, near to its termination, has its lower aperture on the side, which leads into the second stomach or gizzard (*Fig.* 158, *d*), smaller than the first considerably, and smaller than the third stomach (*Fig.* 158, *e f*). This second stomach is provided internally with broad flat teeth, consisting of a horny substance and of rhomboidal shape, serving to compress the vegetable food, and the third stomach has teeth of another form, consisting of recurved sharp conical spines capable of piercing the food for the ingress of the fluids, and of subdividing it even into smaller portions. This third stomach, on being opened, shows at its pyloric extremity the numerous perforations for the hepatic ducts (*Fig.* 158, *f*). Close also to these openings of the hepatic ducts, we observe in this *aplysia*, or sea-hare, common on our coasts, a glandular organ (*Fig.* 158, *h*), consisting of a single long cæcum nearly cylindrical in its form. That cæcum is of a distinct glandular nature, like the corresponding organ of the *doris*, and opens, like that of the doris, into the same pyloric part of the stomach into which the bile is poured by the liver; obviously, therefore, this appears to be the rudimentary molluscous condition of the pancreatic gland. From this third stomach the intestine (*Fig.* 158, *i i*) performs several convolutions, surrounded by the lobes of the liver, and terminates at length in the anus on the right side of the body immediately behind the gills, near to which you observe the auricle (*Fig.* 158, *m*) and the ventricle (*Fig.* 158, *n*), leading to the vesicular part of the aorta (*Fig.* 158, *o*), before which the great splanchnic ganglion (*Fig.* 158, *r*) is found attached to that great arterial trunk.

The proboscidian gasteropods, armed with an exterior complete shield, in form of a spiral univalve shell, are for the most part carnivorous, and present generally a long œsophagus, a short and narrow alimentary canal, with few enlargements, and at the end of the proboscis are two strong lips, covered with sharp teeth (*Fig.* 133, *a*, Vol. II. p. 342), which lips are supported by two, long, stiliform, cartilaginous bodies, like the crystalline stiliform body we saw enclosed in a sac opening into the stomach of the conchifera, and which POLI considered as intended to close the orifices of the hepatic ducts in the conchifera, when bile was not wanted in their stomach. Thus we see almost all the important viscera concerned in digestion, not only developed and constant in the gasteropods; but many of these glands, here of great size, exhibit, as a normal form, that conglomerate structure which marks a higher condition of development in all glandular organs.

Few of the *pteropodous* animals have been examined anatomically, but in the *clio borealis*, which belongs to this class, and in others in which the digestive apparatus has been examined, we observe in all its parts a considerable resemblance to that of the inferior gasteropods, and even to that of the inhabitants of bivalve shells. In this *clio* there are no teeth in the fleshy triangular mouth, and the œsophagus passes long and narrow through the ordinary circular œsophageal chain of ganglia. It dilates into a stomach of considerable length and width, thin, membranous, and perforated. From this long enveloped stomach, the short intestine passes upwards in a curved form, to terminate at the left side of the neck near to its anterior part under the left gill, where it must here terminate, on account of there being no anterior median canal or funnel, and the mantle being entirely closed above in these *pteropodous* animals. The stomach is surrounded here, as in the gasteropods and in the conchiferous animals, and to a considerable extent in the trun-

cated animals, by the lobes of the liver, which pour their secretion into the cavity of the stomach through short wide ducts. In the *cimbulia* there are horny teeth in the stomach, as in some of the gasteropods. The simple unarmed mouth of the *hyalea* opens into a lengthened narrow œsophagus, which leads to a small crop and gizzard, both strong, and, internally, longitudinally plicated. The long, narrow, and equal intestine has its convolutions covered with the lobes of the liver, and ascends to terminate on the right side of the neck.

The digestive organs of the *cephalopods* are those of carnivorous mollusca, well armed to attack their prey at the bottom of the sea, but ill protected with exterior coverings. They present the most elevated and complex form of the molluscous type, which in many parts approaches the nearest to the forms of the parts met with in the vertebrata. They are provided with very powerful curved horny mandibles, with sharp cutting edges, and formed like those of a bird or of the tortoises, consisting of a sharp pointed lower mandible that extends forward and curves upward, more lengthened than the upper mandible. The upper mandible is a shorter and stronger bill. Those horny mandibles of the naked cephalopods are moved by very powerful muscles, and covered externally by fleshy circular lips. They have sharp cutting edges, and are of a very dense, horny texture in the naked cephalopods, but in the nautilus they are strengthened by a deposition of the carbonate of lime, and in place of the usual sharp cutting ridges they are there more obtuse, presenting broader tuberculated surfaces for breaking and masticating the food that is placed between them. The tongue of the cephalopods is short and fleshy. It is covered over its surface with recurved, sharp, horny spines, placed in beautiful transverse series, as seen in this preparation of the common *sepia*. This form of mandibles is a structure which is common in the classes of reptiles and birds, but is rarely developed in the lower vertebrata. We see that structure of spines, however, covering the tongue, which is already common in molluscous classes; and the common limpet has its tongue covered over, an organ in it three times as long as the body, generally coiled up, and covered over with three longitudinal rows of those recurved spines, by which the vegetable food of the limpet can be more easily filed to pieces. They serve to seize as well as to abrade the food in the cephalopods.

Poured into the back part of the mouth, at the base of the fleshy tongue, we observe the secretion of the two pairs of conglomerate salivary glands, by means of ducts which come from an upper smaller pair, and a lower much larger pair. The larger lower pair of salivary glands are placed at the upper and back part of the liver; they send out two ducts, which continue separate to a considerable distance, and then unite to ascend to the mouth as one duct, as you see them preserved in this preparation of the *sepia*. The œsophagus passes for a short distance narrow, and then enlarges to form a crop. Sometimes we observe that enlargement to continue for a short extent in the cephalopods; at other times it continues on along the back part and right side of the liver to near its termination in the gizzard. This crop you observe in the nautilus, as in most of the naked cephalopods, to be provided internally with numerous longitudinal plicæ—plicæ of the mucous coat, extending inwards so as much to increase the extent of internal surface. It consists of very thin glandular parietes, where we observe the means of great distention. At the lower part of the crop, the œsophagus opens into the muscular gizzard on the right side and dorsal part of the body, and below the middle of the cavity of the mantle. This muscular gizzard is provided with very strong, thick, muscular parietes, as in a crocodile or in a gallinaceous bird; those strong parietes, consequently, require that the internal coat of the gizzard should have a proportional strength, otherwise by their strength they would injure the internal lining coat. We observe that those animals are predaceous—that they feed chiefly on testaceous and crustaceous animals, for which those horny bills and strong muscular arms, provided with suckers, are well adapted. Those animals are taken into this muscular gizzard frequently, along with particles of sand, gravel, and other hard substances, which I have found in this cavity with the food, and this enables us to account for the abraded appearance presented by those fragments of the shells of testaceous mollusca and crustaceous animals which we generally see in this muscular gizzard. This muscular gizzard, therefore, is provided internally with a very strong hard coriaceous lining, like that which we see in the gizzard of many graminivorous birds. The gizzard, a short time after death, allows the coriaceous inner lining to become loose and detached; and frequently on opening this stomach you are apt to lose that coriaceous internal almost horny epidermic lining, on removing the contents of the stomach, and not to observe that useful part of the structure, thus approaching these cepha-

lopods to higher forms of vertebrated animals. The gizzard varies considerably in its magnitude; it is always situate at the right and dorsal part of the abdomen. In the nautilus, as in the naked species, you observe the muscular fibres radiating from that central tendinous part on the two sides of the gizzard. This second stomach or gizzard leads by a short and wide passage into a third stomach, considering the crop as the first. That third stomach is commonly called the spiral stomach, from the form which it generally has in the naked cephalopods; it varies also in its form, but in the octopus, the sepia, and the loligo, the structure is of a spiral or convoluted form, making a turn and a half. This spiral stomach has its internal surface increased by the extension to a considerable distance inwards of the mucous internal coat, forming numerous plicæ, which are transverse with regard to the greatest length of this spiral thin membranous cavity. Into this spiral stomach we observe the bile poured by a single duct, formed by the junction of the two hepatic ducts, which unite together at a short distance before they enter this spiral stomach. Those hepatic ducts come down from the lower and fore part of the large liver of the cephalopods, and throughout the most part of their course they are surrounded by little cellular subdivided round glandular sacs that open into them in an oblique direction, pointing downwards towards the spiral stomach. If you open these two wide hepatic ducts, therefore, and look upon their inner surface, you see the transverse valvular openings, like slits, leading into those little glandular sacs or follicles.

When you inflate the hepatic ducts from the spiral stomach upwards, you observe the air escaping by short narrow ducts into those little glandular follicles. Those glandular bodies are, therefore, in the same situation with regard to the liver and the alimentary canal, as the pancreatic glands of other mollusca, and, indeed, of all higher and lower animals. Swammerdam did not know of the existence of the true hepatic ducts of the cephalopods; neither did Monro; and Monro imagined that the ink was the bile of those animals. Observing that the duct of the ink-gland passes into the extremity of the rectum, Monro imagined that here the bile was obviously an excrementitious fluid, thrown out, not into the active digestive first part of the alimentary canal, but close to its final termination, to be immediately discharged from the body; and he thought it might in like manner be an excrementitious fluid in all other animals. Swammerdam supposed that this plicated spiral stomach was itself the pancreas, not observing that it is the ordinary stomach that receives bile, as in almost all other mollusca, and the products of those other minute pancreatic glands, which he mistook for parts of the genital organs. The bile poured into the stomach of the cephalopods is what we have already seen in all the inferior molluscous classes—in the pteropods, the gasteropods, the conchifera, and the truncated animals.

At the opening of the biliary duct (*Fig.* 159, *b*) into the third or spiral stomach

*Fig.* 159

(*Fig.* 159, *d g*), there are generally two prominent edges, like valvular lips, seen internally, on opening this third stomach, at the termination of the common duct of all those little glandular pancreatic and larger hepatic ducts which you observe in this magnified view of these parts in the *loligopsis*, a small but interesting cephalopod which is now before you. Those biliary ducts, here coming from a quadrilobate liver (*Fig.* 159, *a a*), are closely surrounded by these pancreatic glands (*Fig.* 159, *c c*), which open by those transverse, oblique, valvular passages into the hepatic ducts. The opening of the hepatic duct into the third stomach in the *loligopsis* (*Fig.* 159, *d*) we observe to be provided with two long, prominent, thick, valvular folds; those valvular folds extend along the intestine (*Fig.* 159, *h*), from the spiral stomach (*Fig.* 159, *g*), becoming less and less, smaller and smaller, as we approach towards the anus, near to which they actually can be traced. This structure is common in the naked cephalopods,—this valvular structure at the opening of the common hepatic duct into the spiral stomach, which you see in the *loligopsis*. The spiral stomach (*Fig.* 159, *g*) is of great size in this little animal, and its spiral portion is reduced to a very small superficial appendix, seen at its posterior and left extremity; the great body of this stomach is not here of a spiral structure. In the nautilus this spiral structure is still more completely lost, and it there appears like a globular appendix, still, however,

provided with the plicæ of the mucous coat extending into its interior. In this *loligopsis* the crop (*Fig.* 159, *e*) is long, and longitudinally plicated internally, and the gizzard (*Fig.* 159, *f*) is globular and muscular.

The intestine passing from the spiral stomach of the cephalopods is wide and short, corresponding with the animal food upon which those remarkable molluscous animals subsist. It forms a short single turn, a little downwards from the third stomach, close to the left branchial heart; it then mounts upwards, passing along the fore part of the liver, and terminates generally with a valved orifice, immediately below the commencement of the syphon or funnel of the cephalopods.

In the small *sepiola*, perhaps the smallest of the naked cephalopods, you observe the œsophagus with scarcely a perceptible enlargement, passing down behind the bilobate liver to the long gizzard, with strong longitudinal muscular fasciculi, a stomach that is here extended longitudinally, or from before backwards. This very large and strong gizzard in the *sepiola*, leads by a wide, short, and free orifice into the third stomach, which here is wide and lengthened, and does not perform the quarter of a revolution, and is marked by numerous transverse plicæ extending inwards, which affect even its outward form. In this back view of the *sepiola*, you observe the large inferior pair of the salivary glands lying above and behind the liver. The bile is poured in by two long hepatic ducts, uniting into one before they enter the third stomach. The liver here is easily observed, upon removing its peritoneal coat, to consist of numerous ramified cæca, which can be detached and observed, floating loosely in the water, upon removing the cellular tissue and vessels which slightly connect them together.

The magnitude of the liver, the salivary glands, and the pancreas, here in the cephalopods, is nothing remarkable, for we find all these assistant chylopoietic glands greater in the molluscous than in the articulated classes; in the molluscous classes we observe a greater number of species to feed upon vegetable substances, or upon animals very low in the scale; whereas the articulated classes we have seen organized to feed chiefly upon animals, and upon animals even higher in the scales than themselves.

Thus we observe these cephalopods to possess many parts in common with the class of birds, the feathered inhabitants of the air, although they are animals organized to inhabit the deep recesses of the ocean, being but imperfectly organized for swimming, although admirably provided with prehensile organs, in the form of those long muscular feet, covered with suckers, and disposed around the head and mouth. As in the birds, we see here the powerful horny bills; we see the crop upon the œsophagus, we see the muscular gizzard, with its coriaceous lining, of the birds. Here you will observe there is yet no cæcum developed upon the colon; and we scarcely observe in any of these inferior invertebrated animals, a distinctly closed or cæcal cavity developed in that region of the alimentary canal. Indeed you observe scarcely a distinction yet established permanently between the colon itself and the small intestine. The comparative shortness of the alimentary canal here, as in other carnivorous invertebrata, depends on two circumstances. The cephalopods feed on animal food, which must not be in large quantity, nor linger long in the digestive organs to extract its nourishment, otherwise it would putrefy; its highly compound elements would enter into new combinations, which would prove most injurious to life. Another circumstance is, that those cephalopodous animals are still low in the scale; and we observe that this internal alimentary canal, for the reception and elaboration of food, becomes more lengthened and complicated as we ascend from its first appearance in the lowest animals, upwards to man, or to the mammalia, where it is proportionally longer, and more divided into distinct parts with distinct functions, than in all the inferior classes.

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## CLINICAL OBSERVATIONS

ON

## *VARIOUS DISEASES,*

BY

## MR. WARDROP.

*Prefatory Remarks.*—Clinical observations are, for the most part, made on patients in public hospitals, but as the diseases of the poor are usually far advanced before they are admitted into our charitable medical institutions, students seldom have opportunities at an hospital of becoming acquainted with diseases in their early stages, and are excluded from seeing diseases, which, in consequence of their mild character, are not usually considered fit objects for admission.

There are some diseases which are met with only in particular classes of people, the poor being afflicted with all-

ments which are seldom or never observed amongst individuals in other ranks of life; while, on the other hand, affluent persons are subject to diseases which do not afflict the indigent portion of the community. There are also many diseases which, though they are common to all, assume considerable variety of character according to the different classes of people affected by them,—the habits of the body, as well as the avocations of the mind, having each much influence on the human frame, and greatly modifying the course of disease. The clinics of hospitals, therefore, are to such extent imperfect as a means of instruction to those who are educated for the medical profession; and not only in these respects, but in another, inasmuch as the nature of hospital practice limits our acquaintance with the effects which particular modes of treatment produce at distant periods; whereas in the classes of society whose diseases are treated in private, the history and treatment of affections can generally be traced to their termination, and the ultimate results distinctly ascertained. Moreover, in hospital practice it is too common to conceal the result of cases which are unsuccessfully treated, from the public eye, and especially reprehensible, though but too frequent, is it, to recommend in clinical reports certain systems of treating diseases, which time subsequently proves to be unworthy of confidence, the true character of those systems, however, not being afterwards laid before the public, all further experience of the remedies or modes being thus concealed, as far as their propagators are concerned.

It has long appeared to me that another great fault in the records of hospital cases is, that of giving undue importance to examples of diseases which are remarkable only for their rarity or their formidable characters. The same undue value seems often to be placed on what is seldom to be seen in disease, as is awarded to objects for gratifying the senses; whereas the student would derive essential advantages from being made familiar with the symptoms, and expert in the management of diseases, which, though not endangering life, yet materially affect the comfort of those who are afflicted by them. Besides, it ought to be remembered that those diseases which are usually considered to be of minor importance, exhibit phenomena equally interesting to the pathologist, with those of a more serious character, while the former, from their greater frequency, afford a far more extended field for observation.

These considerations have led me to think that clinical observations not confined to the diseases of any one class of the community, but including those of the middle and upper ranks as well as the indigent, are still wanting in our annals, and that their communication would greatly contribute to the advancement of medical science. The collection of materials in sufficient quantity to form a distinct volume of such clinical remarks would, without doubt, advantageously occupy much time and thought, but to render such a work complete, the co-operative efforts of many individuals would be necessary. My present purpose, therefore, is merely, as often as circumstances permit me, to bring together some cases to illustrate a particular practical or pathological point, being guided in the selection by those accidental circumstances which may, at the time of recording them, more particularly engage my attention. In narrating cases I shall endeavour to avoid unnecessary details, and simply record such parts of their history as appear necessary to illustrate the particular point for which they are adduced.

I may here observe that many of the cases to which I shall refer, and many of the observations which will accompany them, were collected and formed at an early period of my practice. Thus I shall have the advantage and satisfaction of knowing that time has enabled me to confirm their accuracy by subsequent experience on repeated occasions, and I shall offer them to the public with the greater confidence. I cannot here avoid observing that the habit of noting down cases and recording observations in early life is a most valuable custom. It not only facilitates composition, but leads both to accuracy of thinking, and a correct mode of observing the multiplied phenomena of disease. Moreover, the impressions which are made on the mental faculties when young are far stronger than those which occur to us in advanced years, and habits of industry acquired when the surrounding objects of life are new to the mind, lay the foundation for future excellence in any avocations that we may be pursuing, and in none so firmly and usefully as those of the medical art. Youth, too, affords unparalleled advantages for gathering information worthy of being recorded relative to the practical rules and opinions of eminent men in various branches of science, with whom we then have opportunities, as students, of coming in contact. How much useful knowledge daily goes into the grave with those who possess it, which might have been saved to the profession and the world, had it been recorded by industrious pupils and anxious observers

amongst those whose duty it is in early life to profit by the orally-communicated experience of others!

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### CASES OF NÆVUS SUCCESSFULLY TREATED BY ARTIFICIAL ULCERATION.

In the ninth volume of the *Transactions of the Medical and Chirurgical Society* (1818), I endeavoured to point out the anatomical characters of nævus, and the various modes of treating this disease. Besides the different operations of extirpation, the ligature, the seton, and tying the vascular trunks supplying such tumours, all which modes of treatment were in use, I then proposed another mode which I had at that time adopted only in nævi of a small size. I can now with confidence venture to recommend this mode of treating not only small nævi, but as a safe and very easy mode of removing nævi of the largest size. I have employed it with complete success, where none of the other modes of operating were even practicable, in consequence of the great extent and the dangerous position of the tumour.

The mode to which I allude is, that of destroying them by *ulceration*, a practice which I was first led to employ, from having noticed the effect of a strong solution of corrosive sublimate, when applied to a subcutaneous nævus, situated on the back of a child. By means of this application the skin ulcerated, and the ulcer spread rapidly, destroying not only the integuments, but the substance of the tumour; after which the ulcerative process went no further, and the surface cicatrized. I had also observed that nature occasionally employed the same process for effecting a *spontaneous* cure of nævi, an ulceration commencing on a thin portion of skin covering the tumour, and then extending into the tumour itself, which it ultimately destroys.

The most effectual and easily manageable mode of producing an artificial ulceration for the destruction of nævi, which I have been able to contrive, is by the application of *kali purum*, the action of which is so powerful as to destroy the vitality of the soft parts on the slightest application. The dead portion is afterwards separated from the living by a process of ulceration, and after the slough thus formed has come away, an ulcerated surface remains, the ulcer spreading over the whole extent of the diseased mass. No bleeding takes place during this process, as nature employs the same means here to prevent hemorrhage as when a part of the body mortifies, the extremities of the vessels being gradually filled up by coagulated blood, in proportion as the ulceration advances in the mass, and the cells of the parenchyma are filled with coagulated blood, the circulation through these having been arrested.

It is sufficient to apply the kali only to a small point of the tumour, for which purpose a piece of adhesive plaster, with a hole cut in its centre of sufficient size for the application of the caustic, should be placed on the tumour, which serves to limit the action of the kali to the desired extent. This done, the kali is to be rubbed on the skin, until a sufficient action is distinctly produced, which is indicated by the discoloration of the skin. If, in two or three days, it is found that the action of the kali has not been sufficient, it may then be reapplied and rubbed on a greater extent of surface, or with greater force, thus securing the formation of a larger and deeper slough. In this manner may it be used any number of times, and it is surprising, after a complete slough has thus been formed, how rapidly the subjacent tumour melts away. It is not requisite that the dead portion should separate, and leave the ulcerated surface exposed. On the contrary, the slough should be left unmolested, as it forms the best dressing, and the ulcerative process will be found to go on imperceptibly, as it were, underneath it, its progress being indicated only by the collapse of the tumour.

The excellent effects of the *kali purum*, and the mode of using it, are illustrated in the following cases:—

*Case* 1.—An infant, two months old, was brought to me with the largest subcutaneous nævus I recollect ever to have seen. It was situated on the left side of the chest, its base covered the greater portion of the pectoral muscle, and it was of such bulk as to prevent the arm from resting on the side. It had all the usual characters of this species of tumour, and the child appeared, in other respects, to be in perfect health. The removal of so formidable a mass with the knife was quite impracticable, and to attempt to include it in a ligature would have been equally hazardous. I was therefore led to attempt its cure by ulceration, and the result was most satisfactory. I proceeded with great caution, applying the kali only on a surface not exceeding the size of a sixpence at the edge of the tumour. The kali was applied in like manner every second day for one month to an adjacent portion of the tumour, and every third or fourth day for the succeeding month, the ulcerative process being not only established, but accelerated, by this mode of treatment, the result of which was, that the whole of the mass ulcerated and sloughed away; and when I saw this child several years after,

I had the gratification to find that no vestige of the tumour remained, nothing, in fact, to denote that it had ever existed, but an extensive cicatrix.

*Case* 2.—For the following account of a very large nævus on the face, treated by ulceration at the *Hospital of Surgery*, I am indebted to Dr. REID, under whose immediate care the treatment was conducted:—

July 1, 1829. A boy, eight months old, had a tumour of about the size and form of half a small orange, occupying the centre of the right cheek, and flattened at the top, where there was no open sore, but where the surface was of a speckled white and red colour, and concave. The edges of this indentation were of a dark red, and much thickened. It could be handled freely without causing the child to cry. It was increasing rapidly in size, and the temperature of the part was always higher than that of the other cheek. Several eminent surgeons saw this case, and gave an unfavourable opinion as to its termination, in consequence of its great size and situation. One gentleman thought that excision offered the only probable chance of cure, but was afraid that the disease had spread too deep to allow even of that operation. On the 7th of July, a space of about the size of a sixpence, in the centre of the tumour, was rubbed freely with the *kali purum*, a piece of plaster with a hole in it of the requisite size having previously been applied. Two days afterwards it was again rubbed, only a very small eschar having formed. On the 19th of August, up to which time the kali had been applied every other day during the first fornight, and every third day after that time, the whole apex was covered by an eschar, half of which had come away, leaving a cavity in the tumour. On the 25th of August the tumour was much reduced in size; the eschar then occupied a space of about the size of a crown piece, and the cavity was filling up with granulations. The kali was now again applied round the edges. The application of the caustic was continued on different parts of the tumour about twice a week, until within a few days of the 14th of September, on which day the eschar was entirely thrown off, and the sore had healed. In another week a fresh eschar, of about the size of a shilling, was formed, as there still remained an elevation above the cheek. One or two sloughs were again thrown off, and the tumour was brought to a level with the cheek, and by the beginning of November nothing was observable but the scar occasioned by the caustic, and a certain induration of the integuments.

There has never been the slightest increase in size of the cheek since that period, and as the boy has grown up, the scar has become even less observable than before, the parts being much softer to the touch than formerly.

*Remarks.*—These cases are sufficient to point out the mode by which nævi, of whatever size, and in whatever situation, may be cured by ulceration; and I may remark, that I have never yet met with any case in which such treatment was not applicable. In my opinion, indeed, this plan renders the more severe operations of extirpation, and, more particularly, of tying large arterial trunks, such as the carotid artery (which dangerous modes of treatment I had recourse to myself in three instances, before I was aware of the plan now detailed), quite unnecessary, and, in fact, I would say, inadmissible. As such serious operations are still resorted to by some eminent surgeons, I am the more anxious to make public the present safe and efficient mode of curing nævi.

A considerable number of cases were treated on the principle of ulceration in the *Hospital of Surgery*, in Panton Square, and I have adopted it in a great number of instances in private practice. Many cases have since been successfully treated with the *kali purum* by other surgeons.

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DESCRIPTION OF A PECULIAR

## DENTAL APPARATUS ATTACHED TO THE VERTEBRAL COLUMN.

*Described by* M. JOURDAN *to the Academy of Sciences, Paris.*

M. JOURDAN has discovered in the *coluber scaber* of Linnæus, in the upper part of the alimentary canal, a kind of dental apparatus composed of thirty osseous processes covered with enamel, some of which were formed like incisor teeth, and projected two lines into the cavity. These processes belong to the thirty vertebræ which succeed the axis, and with regard to their form may be distinguished into two series. The first comprises twenty-two teeth; they are elongated from before backward, and flat transversely; their projection in the body of the vertebra is barely more than a half line, and the crown of the little tooth is sharper as it is nearer the head of the animal. They have not all the same direction; the anterior are directed downward and backward; the middle, directly down; the posterior, downward and forward. In the subjects

examined by M. Jourdan, all the processes did not penetrate through the membranes of the alimentary canal; the eight first processes were covered, but at the point of contact the membranes were very lucid and thin. The second series is composed of eight processes, all of which, except one, penetrate into the cavity of the pharynx. They project two lines, and the lowest are as strong as the incisors of a man.

The dental processes here described are composed of three substances; a layer of enamel covering the crown; an osseous substance, a little darker than the common osseous substance; and an areolar cellular matter, occupying the centre of the process, and communicating with the spongy tissue of the body of the vertebræ. The enamel is the part last formed, and is not laid down before the process is on the point of passing through the membrane. M. Jourdan regards this first portion of the alimentary canal as a kind of pharynx; it is very large, extending from the mouth to a few lines below the heart; here it becomes suddenly narrowed, and terminates in the œsophagus. Its muscular tunic is composed of two layers of fibres. The mucous membrane presents the longitudinal folds of the other ophidiæ, and is very remarkable from the openings for the teeth. In one part the mucous membrane embraces the processes in a manner analogous to the gums.

Thus M. Jourdan establishes the existence of certain processes of the vertebral column, having the form of teeth, performing their functions, and penetrating into the alimentary canal through the mucous membrane. Their connexion with the spinal column distinguishes them essentially from the pharyngeal teeth of the carp and cartilaginous fishes.

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CASE OF

## AXILLARY ANEURYSM

CURED BY SECURING THE

## SUBCLAVIAN ARTERY.

*Communicated by* PROFESSOR LIZARS, *Edinburgh.*

On the 16th of April last, I was requested to visit Mrs. Hain, who complained of severe pain in the left shoulder, extending down the arm to the tips of the fingers, accompanied by a very disagreeable pricking sensation; the pain darted along the course of the nerves, and was much increased by pressure, and the hand, after the least movement, was affected with severe spasms. Upon examination, I discovered a pulsating tumour in the axilla, about the size of a man's small fist, and when applying my ear, I could distinctly hear a thrilling whizzing noise, or the jarring sound peculiar to aneurysm high up in the axilla, and the skin presented its natural appearance. The heat of the affected arm was considerably greater than that of the other; the pulse was 90, full, and strong, and could only be felt when the arm was placed in the straight position.

The patient could not assign any cause for its origin, and first perceived the tumour about ten years ago, when it was very small, and gave her little or no inconvenience, even when engaged at her usual employment, which is that of a weaver. She stated that it had enlarged remarkably slowly, and that only within the last six months had it increased with any rapidity. About eight days ago, while making her bed, she felt a sensation as if something had given way in the tumour, and in the evening of the same day she observed it had become of a different shape, and much larger than on the previous day. On the same evening she was seized with the severe pain in her shoulder, which gradually extended down the arm to the points of the fingers; and she remarked, that since the pain had become so severe in the arm, she found her general health considerably impaired; she was forty-two years of age, and of rather a spare habit of body, and her countenance indicated great bodily suffering.

I ordered cold lotions to be applied to the arm, and enjoined rest, with strict antiphlogistic regimen; but stated to the patient, that an operation in my opinion was the only remedy. I also requested Mr. Cooper to see the case, who, after examining the tumour, coincided with my views, and we agreed to request Professor Lizars, of Edinburgh, to perform the operation, to which our patient consented in a few days. That gentleman, on his arrival on the 26th of April, considered the case favourable for an operation, which was, accordingly, performed on the following day, in the presence of nineteen of my professional friends, among whom were Dr. Ramsay, Mr. Crichton, Mr. Cochrane, Mr. Saunders, Mr. Martin, and Dr. Taylor of Broughty Ferry; the professor was assisted by Mr. Alex. Lizars, lecturer on anatomy in Edinburgh, Mr. Cooper, and myself. The patient was placed on a table with her head to the light, and her shoulders raised on a couple of pillows, with the head gently reclining over, and the face

turned away from the side to be operated on. The affected arm was kept close to her side, and the shoulder brought round towards the mamma. The professor then made an incision of the integuments at the root of the neck, parallel with, and a little above, the clavicle, from the acromion process of the scapula, nearly to the tracheal margin of the sterno-cleido-mastoideus. He next divided the platysma myoides, and cautiously cutting, exposed the lower belly of the omo-hyoideus and the scapular margin of the scalenus anticus, when the subclavian vein presented itself, large and turgid, which was held aside with a curved spatula. In performing this part of the operation, one of the small cervical veins was intentionally divided, and required a ligature. The attachment of the omo-hyoideus to the clavicle was also separated. The first rib could now be distinctly felt, together with its tubercle, and the acromial margin of the anterior scalenus and the axillary plexus of nerves were evident to the eye, but no artery was seen or felt. Mr. Cooper immediately remarked, that the artery was held aside along with the vein under the curved spatula; accordingly on the removal of this instrument, the artery was seen posterior to the vein, from which it was carefully separated, and a common aneurysmal needle easily carried under it. The vessel was compressed on the needle, when all pulsation ceased in the tumour, as also in the arteries at the wrist, so that every one present was satisfied it was the subclavian artery. The ligature was tied with facility with the fingers, and both ends were cut away; the lips of the wound were approximated with stitches, and covered with lint previously dipt in cold water. The whole of the operation, from the time the patient was placed on the table to her being put to bed, occupied ten minutes. There was little or no blood lost—not more than two ounces.

The pulsation in the tumour never returned; but about sixty hours after the operation, it could be felt in the arteries at the wrist. The stitches were removed on the third day, as a considerable portion of the wound had healed by the first intention; two adhesive straps were applied, and allowed to remain on for four days, when the wound had so granulated and contracted as to require no further support or even dressing. From this period, eight days after the operation, nothing particular occurred. The patient's bowels were kept open with small doses of castor oil, and she was ordered low diet and rest until all risk of hemorrhage was past. The ligature had never been seen, and she has felt no pain in the region of the artery or anywhere else. The tumour is diminished to one-fourth of its former size, and she uses her arm in her common household work, and intends shortly to resume her usual employment of weaving.

(Signed) JAMES KNIGHT, Surgeon.

83, Nethergate, Dundee,
28th June, 1834.

*Remarks by Mr. Lizars.*

The preceding case deserves to be recorded, from the anomalous course of the subclavian artery, for there appears little doubt that the vessel accompanied its vein anterior to the scalenus anticus muscle, otherwise how did the curved spatula so easily hold the artery and vein aside? How did we see the scapular margin of the scalenus anticus and the brachial plexus of nerves, and feel the surface of the first rib between these, but no artery?

Had I not made a clear dissection of the parts so as to see every organ, and been assisted by an anatomist, I would still have doubted its variation. I have since examined the arteries of a few subjects, but a hook or spatula cannot embrace it and its vein in the same manner. Few facts are more valuable to the surgeon than the varieties of arteries. The brachial artery seems to divide so frequently above the elbow-joint, that such appears to be the more regular distribution. Tiedemann's and P. H. Green's (of Dublin) collections of the varieties of arteries are invaluable.

The accompanying drawings exhibit the wonderful varieties of nature. They were sketched by a very intelligent pupil of mine, Mr. Henry Taylor, who devoted much of his time in the prosecution of pathological anatomy during the rage of our late epidemic cholera.

They were taken from a stout man who died of pneumonia at the advanced age of 61, the father of a large family, healthy and robust, and who himself had generally enjoyed good health.

Had this old man during his life required the arteria innominata to be secured for aneurysm, where would the operator have found it?

JOHN LIZARS.

Edinburgh, 38, North Place,
22nd July, 1834.

(*Vide Engravings on opposite page.*)

*Fig.* 1.—*View of Heart, in Situ.*

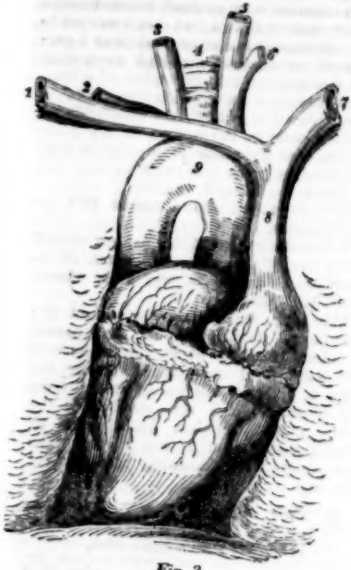

*Fig.* 2

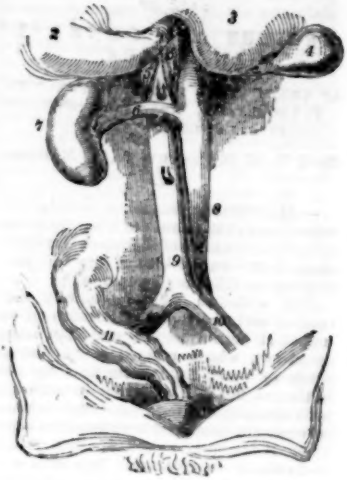

*Fig.* 3

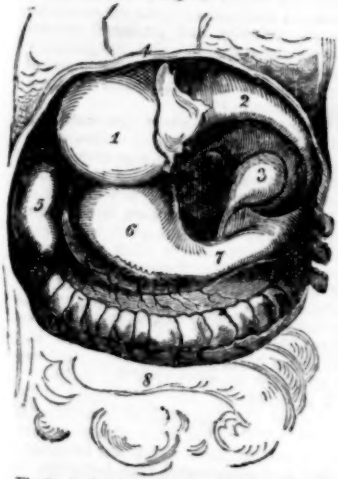

*Fig.* 4

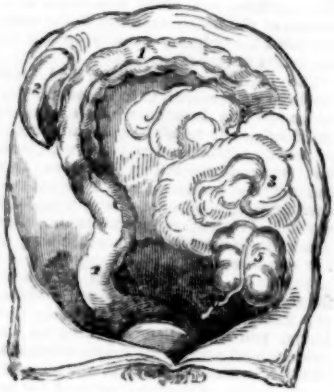

*Fig.* 1.—1. Subclavian vein. 2. Subclavian artery. 3. Carotid. 4. Trachea. 5. Innom. caretid. 6. Subclavian a. 7. Subclavian v. 8. Vena cava. 9. Aorta.

*Fig.* 2.—1 Œsophagus. 2. Stomach. 3. Lobulus spigelii. 4. Gall-bladder. 5 5. Crura of Diaphragm. 6. Right renal vein. 7. Right kidney. 8. Vena cava. 9. Aorta. 10 10. Common iliacs. 11. Sigmoid flexure of colon.

*Fig.* 3.—1. Right lobe of liver. 2. Left lobe of liver. 3. Gall-bladder. 4. Diaphragm. 5. Spleen. 6. Stomach. 7. Pyloric extremity. 8. Small intestines.

*Fig.* 4.—1. Transverse colon. 2. Spleen. 3. Small intestines. 4. Sigmoid flexure of colon. 5. Caput cæcum. 6. Processus vermiformis.

CASE OF

## ASCITES AND GENERAL ANASARCA,

OF THREE YEARS DURATION, CURED BY PARACENTESIS, AT TWICE, WITHOUT OTHER TREATMENT.

*By* J. L. M. M'CARTHY, *M.D., Macroom.*

—MAHONEY, ætat. 22, a female servant living at the house of a farmer seven miles from the town of Macroom (Ireland), came to me on the 10th of May last presenting the following symptoms:—

The abdomen was enormously distended, and there was protrusion of an umbilical hernia to the size of a large cocoa-nut, which seemed to be almost ready to burst from distention by the contained fluid. The upper extremities, with the neck and face, were slightly anasarcous, but both lower extremities were most enormously swollen, and pitted everywhere on pressure. Skin cool and clammy to the touch; pulse 120, and wiry; tongue covered with a thick whitish fur, and the papillæ towards the tip extremely red and prominent. She complains of slight headach, and pain in the epigastric region, with extreme dyspnœa. On examination I could not detect any disease of the heart, as auscultation only exhibited the ordinary healthy sounds of the action of that organ.

The patient states that she had been for three years subject to the disease under which she now labours, which she attributed originally to her having caught cold by washing clothes in a river with bare feet while menstruating, but says that she never experienced much inconvenience from it until very lately, when the abdominal distention became so considerable as to prevent her from continuing at her employment.

She states that her bowels have been for some time rather constipated, and that she micturates but once in twenty-four hours, and that when she does so she passes about a quart of urine, sometimes attended with slight pain in the loins and pubic region. On examination of the patient's urine I found it of the specific gravity of 1025, and it did not coagulate with acids or by the application of heat. She never complained of uneasiness or pain in the loins except when micturating.

When first the disease attacked her, she stated that she had wandering pains in the epigastric and both hypochondriac regions, with a swelling in the region of the spleen, which felt tender and painful on pressure. The distention of the abdomen was attended with so much inconvenience to my patient that I had her removed to her lodgings in Macroom, and there I performed paracentesis, and took away from her five gallons and one pint of a clear straw-coloured fluid, which coagulated by the application of heat, and with acids. I did not close up the wound, as my practice on such occasions is merely to bind the bandage tight over the abdomen, and to leave the wound to nature, which I have never found to be attended with inconvenience.

I then directed that the patient should get a draught as follows:—*Tinct. Hyosciami* ℥ss; *Olei Ricini* ʒvj; *Aquæ Cinnamomi* ℥j. Misce.

May 11th. On visiting my patient this morning, I found that she had passed a tolerably good night, and had had one solid fecal evacuation. There has been a great discharge of water from the puncture, and the swelling of the lower extremities has diminished. A small quantity of urine was voided. She was ordered the following medicine for this day.

℞ *Pulv. Jalapæ, Pulv. Zingiberis,* aa gr. x.; *Potassæ Supertartratis* ʒss. Sit pulvis statim sumendus.

May 12.—On making inquiry this morning I was informed that the medicine ordered yesterday had produced several loose watery stools, but that the patient's family, not wishing to be at the expense of keeping her in town, had taken her back to the country.

I heard no more about her until the 2nd of July last, when she was again brought to town, and I was once more called on to attend her, and found her with her abdomen again much distended, and the umbilical protrusion larger than when she applied to me at first. There was a perforation at the most prominent part of this tumour, from which some of the fluid contained in the cavity of the abdomen was continually oozing. The anasarcous state of the patient's lower extremities was much less than on the former occasion, and there was no œdema at all of the upper parts of the body.

I immediately, for the second time, performed the operation of paracentesis, and on this occasion drew off six gallons and a half of fluid, which was of darker colour, and more turbid, than formerly. I then left my patient as before, with orders that she should take a draught of castor oil and tincture of henbane, as at the last time of operating.

On this latter occasion she did not get her medicine, and her friends took her on

the following day to the country, after which I heard nothing more of the case until she called on me three weeks after to tell me that she was perfectly recovered, and felt no inconvenience beyond slight constipation, for which I ordered a little aperient medicine to be taken occasionally. I understand she has since continued well.

Macroom, August, 1834.

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RESEARCHES ON THE AVERAGE LENGTH OF LIFE

## AMONGST PHYSICIANS,

*By* Dr. Caspar, *and published in the Revue Britannique.*

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The result of the researches made by this distinguished physician, proves in the most incontestable manner the melancholy truth, that he whose existence, in Germany at least, is devoted to prolong the life of his fellow creatures, shortens the probable duration of his own life in a most remarkable manner, and that too, in all probability, by the means employed to instruct himself when young.

M. Caspar has examined the circumstances attending the deaths of 624 physicians in Germany, and found that barely one-fourth had attained the ordinary duration of human life, while only a very few indeed reached what may be called old age.

If we examine the duration of life in other professions, the difference against the physician will be more remarkable. Let us take, for example, the theologians, who, now-a-days, like an easy life, and, consequently, a long one. The following table will show the relative difference of deaths at an advanced period. Take 1000 of each.

| Age. | Physicians' deaths. | Theologians' deaths. |
|---|---|---|
| From 23 to 32 .. | 82 .... | 43 |
| 33 — 42 .. | 149 .... | 58 |
| 43 — 52 .. | 168 .... | 64 |
| 53 — 62 .. | 210 .... | 182 |
| 63 — 72 .. | 228 .... | 328 |
| 73 — 82 .. | 141 .... | 255 |
| 83 — 92 .. | 30 .... | 70 |

Thus, in the prime of life, from 33 to 52, 347 physicians die from amongst a thousand, whilst amongst theologians the mortality amounts only to 122; and while 30 physicians pass the age of 83, we have 70 theologians exceeding the same period.

From a long list of tables M. Cooper draws the following conclusions, by which it appears that theologians rank at the head of the scale for longevity, while the medical profession is at the bottom. Amongst 100 individuals of each class, he finds that those attaining the age of 70 have been as follows:—

| | |
|---|---|
| Theologians | 43 |
| Agriculturists | 40 |
| Politicians? (*Employés dans les hautes places*) | 35 |
| Merchants | 35 |
| Military men | 32 |
| Lawyers | 29 |
| Artists | 28 |
| Professors | 27 |
| Practising Physicians | 24 |

The causes of this immense difference are easily estimated, and we might easily dilate on them. It is a subject on which the public are either ignorant or without thought.

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## RECORD

OF THE

## CONCOURS HELD AT PARIS,

IN JUNE, JULY, AND AUGUST, 1834,

*To supply the Vacancy in the Chair of*

*CLINICAL SURGERY,*

OCCASIONED BY THE DEATH OF BARON BOYER.

(Continued from page 694.)

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## *ARGUMENTATIONS*

ON THE

## THESIS OF M. SANSON,

(ON THE IMMEDIATE UNION OF WOUNDS,

*Analyzed at page 690,*)

BY MM. VELPEAU, BERARD, AND GUERBOIS.

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*Remarks of M. Velpeau, and Replies of M. Sanson.*

M. Velpeau commenced by an eulogium on the thesis of M. Sanson, which, he said, exposed the merits of the question he had to treat in a very clear and satisfactory manner. There were, however, several points which he expected to find noticed in the thesis, that were passed over in silence. Thus, for example, there was no mention of renewing the dressings frequently, as a means of favouring union by the first intention, although every one

knew that it was a main object to keep the wound clean, and free from all irritating matters

M. SANSON answered, that union by the first intention should be established more or less perfectly in two or three days from the first dressing; if union do not take place within that time, the wound becomes a suppurating one; now, as the first dressing always remains on longer than the time above specified, it was not necessary to mention the change of dressing as a means of favouring the union.

M. VELPEAU said this might perhaps be true, if a complete and perfect union took place within the first few days, but as a perfect union of the divided parts never did take place, as the wound must necessarily furnish more or less suppuration, he thought the renewal of the dressings was a capital point of the treatment, and should not have been neglected.

M. SANSON returned to his former explanation. It was a matter agreed upon universally, not to remove the first dressings after an amputation, before the sixth day, unless some accident rendered it necessary. There was not a surgeon in Paris who did not conform his practice to this rule; now, as all that could be expected from union by the first intention must obviously occur within six days, he did not see the necessity of mentioning "renewal of the dressings;" the wound was either united, or had become a suppurating one, before the surgeon ever thought of changing the apparatus.

M. VELPEAU.—There is another means of favouring union by the first intention which you have neglected to mention, although it has often been employed with success, and is, in my opinion, a secondary means of great value—viz. compression.

M. SANSON said that his experience led him to a conclusion diametrically opposite. He considered compression, and everything that might tend to irritate the wound and disturb the process of union, as essentially bad; this was his reason for not mentioning compression.

M. VELPEAU.—In page 13 of your thesis, you say, in speaking of conditions favourable to primary union—"It is necessary that the wound be recent. The shorter time the wound has remained exposed to the air, the more apt it will be to heal without suppurating. The chances of obtaining this mode of union diminish in proportion as the wound inflames, and fleshy vascular granulations spring up." Although this may be true as a general rule, it is not strictly applicable to all cases, and the exceptions should have been mentioned. Thus we may have union of a wound by the first intention after granulation has commenced; besides, you have altogether neglected to speak of those cases where a suppurating wound has suddenly changed its character and united by the first intention, although the edges have remained open for five or six days.

M. SANSON considered the condition mentioned by him as one necessary for immediate union; where granulations are once formed, immediate union is quite impossible. As to the cases quoted by M. Velpeau, they were not examples of union by the first intention, at least according to the definition of the term which M. Sanson had laid down, and which he read, "The operation by which the surgeon places in contact the opposite points of a wound, to obtain adhesion without suppuration, or with the least suppuration possible." When a wound unites, after having remained open for four or five days, it is manifestly the union of a suppurating wound.

M. VELPEAU.—In page 110 you describe a mixed method of treating wounds after amputations, which consists in placing lint between the edges of the wound, and allowing only the deep parts to unite by the first intention. You say this is the method recommended by Boyer, and also the same which M. Dupuytren and Larrey follow on some occasions. Now, if I am not greatly mistaken, M. Larrey unites his stumps at once, and M. Dupuytren certainly does not put a rouleau of lint between the lips of the wound; besides, at page 50, you condemn this very method, when you say "that tents of lint often act contrary to the purpose for which they are applied in stopping the wound, and cause a stagnation of the pus, &c. Your method therefore is merely the method of O'Haloran, and is condemned by yourself.

M. SANSON.—There is so little difference between the method which I have described, and that followed by M. Dupuytren, M. Roux, &c., that I am justified in classing them under the same head. I place the lint along the lips of the wound; they place it perpendicularly, extending from the bottom to the surface; the intention however is the same, to prevent an accumulation and retention of pus, and this method is applied only when the circular incision has been employed, not after flap operations; besides, wounds made while amputating, are different from other wounds, and require a special treatment; the remark in page 50, to which you object as a contradiction, was applied to wounds in general, not to amputations, which I have in my thesis distinguished from the former.

*Remarks of M. Lisfranc, and Replies of M. Sanson.*

M. LISFRANC's first objection was founded on a passage, page 29, in which M. Sanson speaks of the suture after amputations, and rejects this means, as likely to bring on irritation and contraction of the muscles through which the suture is passed, although Delpech has employed it with advantage after disarticulation of the extremities, &c., without experiencing the above-mentioned inconveniences. Here, said M. Lisfranc, is an error which should be corrected. Delpech certainly employed the suture after amputations, disarticulation, &c., but not in the manner which you have described; he carefully avoided passing the thread through the muscles, tendons, &c., and merely embraced the skin and subjacent cellular tissue. The ideas of Delpech on this point have been published, and you will find them in the thesis of M. Serre of Montpellier.

M. SANSON was obliged to confess his error after the authority quoted by M. Lisfranc. He had supposed that Delpech embraced the muscles as well as the skin in the suture. Perhaps he had been led into this error by what he had observed in Germany, where he had often seen the suture employed, and remarked that it failed whenever the muscles &c. were comprehended.

M. LISFRANC did not mean to defend the process of Delpech, of which he was far from approving; he merely wished to correct the error into which M. SANSON had fallen, and concluded by stating, that a means upon which Delpech placed more reliance after amputations of the thigh than the suture, was to place an assistant by the patient, who kept up a gentle pressure on the surface of the stump for a considerable time after the operation. This he found to be the most efficacious means of preventing the convulsive retraction of the muscles which so often renders it impossible to keep the edges of the wound together. (The next point gave rise to a very warm discussion between the candidates.) In speaking of wounds of the head (page 67), M. Sanson says, that they "are often complicated with pain, hemorrhage, and extension of the inflammation under the cranial aponeurosis, &c. These accidents are to be combated by the appropriate means, particularly by bleeding, proportioned to the age and strength of the patient." Often, says the author, leeches behind the ears, compresses dipped in cold water, sinapisms to the legs, with laxatives, have succeeded in preventing the development of inflammation in cases where it seemed most imminent. If, in spite of the well-directed use of these remedies, inflammation of the sub-aponeurotic cellular tissue should set in, we have nothing to do but at once abandon all hopes of uniting the wound, and make large incisions (*deleridements*) down to the bone. M. Lisfranc now attacked this practice very warmly, and denominated it as altogether faulty. In cases of inflammation under the cranial aponeurosis, it is not necessary to have recourse to incisions as soon as inflammation declares itself. The surgeon should first endeavour to combat the inflammation by local bleeding, and particularly by revulsions on the intestinal canal. This was the practice followed at *La Pitié*; the facts were well known, and it was demonstrated that the necessity of incisions was often dispensed with by a sedulous attention to the principles he laid down. M. Lisfranc quoted many cases in which he had succeeded in arresting the species of inflammation alluded to, by acting on the intestinal canal, &c., and concluded that M. Sanson was in error in confining his antiphlogistic treatment to a prevention of inflammation, and not continuing it after the development, reserving his incisions for cases where these means failed.

M. SANSON.—(This was an objection which M. Sanson found some difficulty of answering in a satisfactory manner, not so much from want of good reasons, but because it was necessary to take the spirit of the passage rather than the actual words. He, therefore, commenced by reading the passage which we have quoted, amidst considerable laughter excited by the way in which M. Lisfranc pronounced at every third word, "bon, bien," &c.) M. Sanson remarked, that the employment of local bleeding, purgatives, derivatives, &c. was mentioned and recommended by him. If these failed, he saw nothing to be done, except to have recourse to incisions. From a strict interpretation of the words, it might, perhaps, follow, that he only used antiphlogistics to prevent the development of inflammation; but it was evidently understood that the preventive measures were to be continued after inflammation appeared; any surgeon would comprehend him in this manner.

M. LISFRANC said he did not know what M. Sanson might have had in his head, he only knew what was written in the thesis, and it followed from M. Sanson's words, that as soon as ever inflammation of the cranial sub-aponeurotic substance set in, he had recourse to incisions, without using those general means which

the practice of M. Lisfranc, at *La Pitié*, showed to be successful. In page 64 (M. Lisfranc continued) you blame the advice of Petit, who recommends the surgeon to make a counter-opening near the base of the flap, in wounds of the cranial integuments, in order to avoid the inconveniences which would arise from the accumulation of pus between the flap and the bone: you prefer the immediate application of the flap supported by compresses, sutures, &c. I cannot agree with your condemnation of Petit's practice; the formation of pus between the aponeurosis and skull is a dangerous accident, which the surgeon should avoid by all the means in his power. Now when the flap is closely applied, and the dressings are left on for several days, there is great danger that purulent matter will accumulate under the integuments, become infiltrated into the neighbouring tissue, detach the scalp largely, and aggravate all the accidents of the primary wounds. In some cases the distention by the pus thus confined has been so great as to lacerate the cicatrix of the integuments.

M. SANSON explained at some length the reasons for adopting his opinion. Like you, said he, I commenced by making a counter opening, but I soon found that Petit's method was neither necessary nor advantageous, and that it was much better to retain the parts in perfect contact. It is evident, that the best means of preventing the pus from spreading under the fascia, is to prevent its formation altogether, and this is best attained by the method which I employ; besides, if pus begin to be formed, the surgeon cannot long remain ignorant of the fact. The patient suffers more than ordinarily, and complains of pain, tension, &c. The dressings are removed, and the existence of any fluid under the thin layer of integument which covers the skull is very easily ascertained. It is now time enough to make an opening for the discharge of the matter, and I think that we may advantageously dispense with the preventive incisions of Petit.

M. LISFRANC.—But if the patient suffer sufficiently to draw your attention to the wound, it necessarily follows that pus is already formed, and the mischief done which Petit's counter-opening would have prevented. Besides, you recommend a methodic pressure on the flap, but you do not confine this means to any peculiar kind of wound, as you should have done. To what kind of flap would you apply pressure, or would you use it with all, indifferently? In cases where the base of the flap is very narrow, the circulation difficult, &c. (and this often occurs in wounds of the scalp), methodic pressure may interrupt the feeble circulation through the strip of flesh connecting the flap with the rest of the integuments, and tend to produce gangrene. Now all surgeons, wherever there is any fear of gangrene being produced, avoid the use of pressure, and have recourse to the suture.

M. SANSON said, that his remark applied only to cases where the base of the flap was large and extensive. When the wound is narrow, there is no occasion to employ pressure, as the parts have not the same tendency to retract and keep the edges of the wound open.

(The time here expired.)

*Remarks of M. Berard, and Replies of M. Sanson.*

M. BERARD.—Our space will not permit us to give this argumentation at any length, although he made many of his objections tell. He commenced by repeating and enforcing an objection already offered by M. Velpeau, viz., that M. Sanson had altogether neglected mentioning the healing of wounds by the second intention. There were three principal forms in which wounds heal,—by the first intention, by suppuration and granulation, and by the second intention; this latter form was perhaps as frequently seen as either of the two others, and he had expected to see its advantages discussed.

M. SANSON remarked in reply to this, that it was not a question which he had to treat; besides, it came under the head of suppurating wounds. The next point was debated warmly.

M. BERARD insisted that serous membranes were not vascular, and quoted BICHAT, many modern anatomists, and several judges of the concours, who were of the same opinion.

M. SANSON answered that he had injected the free surface of a serous membrane, and that he desired no better evidence than his own eyes; he had also seen pathological preparations which proved the same fact; besides, he did not want authorities to support his opinion.

M. BERARD, finally, reproached the author with an inconsistency, in saying at one time that the ligature tended to plug up the wound and retain the pus, while at another he said they served to conduct the fluids to the angles of the wound; besides, he had neglected to mention the method practised by the English surgeons, who, instead of assembling the ligatures in bundles, and drawing them out at the corresponding angles, bring each ligature down singly in a perpendicular direction; by this means the thread traversed the least possible space,

and the irritation was, consequently, less.

M. SANSON did not seem well to understand this objection, for he denied the possibility of bringing all the ligatures perpendicularly out, and we left M. BERARD constructing an equilateral triangle with the sides of the stump, the apex at the bone, the base inferiorly, and endeavouring, but in vain, to demonstrate to the surgeon of the *Hotel Dieu*, that he could let fall any number of perpendiculars from the sides of the triangle upon the base. M. SANSON affirmed, in reply, that the perpendiculars would be all oblique, from which we concluded that he was a much better surgeon than mathematician.

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## *THESIS OF M. VELPEAU*

### ON THE OPERATION OF TREPANNING IN WOUNDS OF THE HEAD.

THIS is by far the most voluminous of the theses to which the present concours has given birth. Indeed, few men but M. Velpeau could have collected in the short space of eight days the immense quantity of matter which is contained in the 270 octavo pages composing his thesis. At each moment we find quotations (page and volume given), the whole selected from the most celebrated writers of every nation, and if professional learning alone were to bear the palm, we should have no hesitation in according it to the author. Unhappily, however, he seems to have lost himself in the extent of his researches; and the thesis, though superior in many points, is deficient in the very essential one of clearness. The reader is confounded by a multitude of conflicting operations, and finds himself at last in the predicament of the Athenian sage, whose learning led to the very unsatisfactory conclusion "that he knew nothing."

The thesis is divided into four parts. The first is historic. In the second the author exposes at length the principles by which the surgeon should be guided in the application of the trepan. The third part contains an examination of the doctrines delivered up to the present day on the same subject by the best writers. The fourth part treats of the consequences of the operation. We commence our analysis:—

Wounds of the head sometimes require the use of the trepan, not exclusively on their own account, but rather from the accidents attending them. M. Velpeau, therefore, commences by passing in review the different complications and consequences of wounds involving the soft or hard parts of the skull. It is impossible for us to follow the variety of details into which the author enters. We must content ourselves (though at the risk of being a little obscure) with endeavouring to arrive at his conclusions. In simple cases of wounds of the head, no surgeon thinks of trepanning; but in many cases the injury extends to the dura mater, the bone mortifies, and fluid is effused between the skull and dura mater; here is the first indication for the trepan established by the author, who maintains that necrosis of the two tables requires trepanning, whether there be symptoms of compression or not, and quotes three cases from his own practice, where the patients died in consequence of his having neglected to operate.

*Fractures.*—M. Velpeau examines each species of fracture separately.

1st. *Of the External Table.*—These do not require the trepan (Astley Cooper), unless symptoms of suppuration of the bone or necrosis set in.

2nd. *Of the Internal Table.*—Though long debated, this fracture seems now established (Samuel Cooper). Whenever the symptoms are such as to give rise to the idea of a foreign body irritating the membranes, brain, &c., this fracture may be suspected, and the trepan applied to the injured point, although the external table is sound.

3rd. *Fissures.*—Simple fissure does not require the trepan; we should wait for symptoms of effusion, &c.; but when the fissure is large, blood is almost always effused between the bone and dura mater. In the latter case many surgeons reject the trepan, saying the fracture is sufficient for the discharge of the fluid; others endeavour to enlarge the fissure. M. Velpeau prefers the trepan, when the blood is not freely discharged, and disapproves of all artificial separation.

4th. *Radiated Fracture.*—Sometimes this fracture is confined to a single bone; sometimes it extends to several, radiating from the top to the base of the skull; here the commotion and contusion of the brain are great, the effusion is disseminated; the surgeon does not know where to apply the trepan; however, a few applications may be risked, if he have reason to suspect a more considerable collection at one point than at another.

5th. *Depressions. Without Fracture.*—This

accident, though formerly admitted by all surgeons, is now considered impossible in the adult. It cannot be produced on the dead body, and in the cases published there is no proof that fracture did not exist at the same time.—*With Fracture.* In these cases the application of the trepan is the general rule. The cases in which trepanning may be dispensed with are the exceptions.

6th. *Fractures from Gunshot Wounds.*—The trepan is often indicated in these wounds, on account of the nature of the accident. Injuries by a pointed weapon, as a sword, &c., do not require an operation by themselves; when symptoms of effusion, &c., come on, it is time enough to apply the instrument.

7th. *Foreign Bodies; Solids.*—In wounds of the head various foreign bodies may indicate the necessity of applying the trepan, as splinters of a fractured bone, fragments of a necrosed bone, shot, balls whenever they have not penetrated far beyond the wound, fragments of instruments, &c. In all these cases the use of the trepan is established without controversy.—*Liquids.* It may be laid down as a general proposition, that every effusion of any extent into the cavity of the skull requires the operation of the trepan. M. Velpeau examines the propriety of attacking by this means every variety of effusion—viz. of blood, between the dura mater and bone, into the serous cavity, into the substance of the brain, of pus in the same situations. As to the propriety of trepanning in cases where the blood is effused into the cavity of the arachnoid, Sir A. Cooper, Mr. S. Cooper, Abernethy, &c., reject the operation almost absolutely. M. Velpeau does not go so far. Whenever there are severe symptoms of compression he would trepan.

When effusion takes place in the substance of the brain, the wound is almost necessarily mortal; however, the author thinks the trepan may be tried as a last resource, and quotes the case (from his own observation) of a young Englishman who shot himself in the temple with a pistol; the ball came out near the sagittal suture on the same side, having traversed the whole of the cerebral lobe; the hemorrhage was abundant, but death did not take place at once; suppuration had time to be established; the medullary substance presented itself at the openings, and considerable portions were removed; finally, the patient was on the point of being cured, and would have certainly recovered, had it not been for the greatest imprudence on his part.

In the third chapter the author studies the propriety of the trepan in a pathological view—that is, according as there exist symptoms of compression, contusion, commotion, and inflammation.

M. Velpeau considers that foreign bodies, whether solid or liquid, act on the brain, not directly, but by the medium of another power, viz., the resistance of the osseous covering of the brain; and hence trepanation has for its object, in cases of compression, not only the discharge of the foreign compressing substance, but also the destruction of the means by which compression is effected, viz., the resistance of the skull. This has been proved satisfactorily by the experiments of Fleurens. Hence, as a general thesis, the trepan is the best remedy against compression, whatever be its cause, degree, &c. This, however, does not establish the necessity of trepanning in all cases of compression, and the author satisfactorily explains how numerous cases may be cured without the trepan, when the symptoms are but transitory, the brain little injured, &c.

*Contusion* of the brain evidently requires the trepan, for the disorganized parts must suppurate and be discharged.

*Concussion.*—Here the trepan is never applicable, and M. Velpeau, following the advice of Abernethy, absolutely rejects it.

*Inflammation.*—When the traumatic inflammation is fully established and diffused, the trepan is not to be thought of; but when inflammation is only threatening, or circumscribed, the operation should not be absolutely rejected. The patient, trepanned by Dease and Schmucker, recovered, although affected with meningitis; and in going over the observations contained in authors, it is easy to see that wounds of the head, with an opening into the skull, are accompanied by less severe inflammatory symptoms than other wounds, and that the inflammation is less in proportion to the loss of cerebral substance. The twenty-two patients described by Paroisse (*Ob. de Chir.* 1806) had wounds of this kind; they were all obliged to march above thirty leagues, without observing any regimen, yet twelve recovered.

After having quoted a variety of examples from Tulpius, Scutte, Schenk, Muys, Hoffman, Jeubeler, De Guise, &c., to prove this proposition, M. Velpeau explains it by the circumstance of the opening, which prevents any chance of compression, and this determines any inflammatory action to a circumscribed spot. Hence, without giving a fixed opinion, he thinks that the operation of the trepan should take rank amongst the remedies employed against inflammation of the brain following wounds of the head; at least it is a new question

to examine; and does not seem more frightful or irrational than the extensive incisions made to combat diffuse phlegmon of the extremities.

*Secondary Accidents.*—A patient may be perfectly well cured of his wound, yet after a variable number of months or years, experience symptoms sufficiently grave to require the trepan; such as convulsions, tetanic affections, epilepsy, &c. These are generally produced by a splinter of bone, necrosis, separation of the dura mater, &c. The trepan should be applied if nothing exist to account for the symptoms, except the old wound, if the cicatrix be sensible, if there be œdema under it, or crepitation.

Having thus described the different lesions which may indicate trepanation, the author proceeds to study the symptoms of those lesions, which he reduces to irritation, compression, contusion, concussion, and inflammation. In chapter the fourth, the symptoms of each affection are described at length. Contusion of the brain, says M. Velpeau, is marked by a dull, deep pain, accompanied by numbness, pulsation at the corresponding side of the skull, a sensation of weight, cold, and pressure, about the wounded place. Whether these symptoms be accompanied by paralysis, convulsion, fever, or not, they indicate the existence of contusion, and the trepan should be applied. Where this operation has not been performed, nearly all the patients so affected have died. Chapter 5 contains an examination of the opinion laid down by several surgeons, that the trepan should never be applied, 1st. Over the sutures; 2nd, The sinuses; 3rd. The temples; 4th. Over the passage of the middle meningeal artery; 5th. Over the occipital protuberance, &c., 6th. Or when the effusion is at the base of the skull.

1. *Trepanning over Sutures.*—This question is now resolved by experience. No surgeon hesitates to trepan over the sutures if necessary. Guillemeau found himself obliged to do so in 1591 (*Œuvres Chir.* p. 659). Lusitanus applied the trepan over the sutures (*Portal*, t. i. p. 500). Finally, Thiriot, Morand, Wauner, and Hoffman, have followed the same practice. For each of these opinions M. Velpeau quotes page and volume.

2nd. *Over Sinuses.*—There is no good reason for not trepanning over the sinuses. The least compression is sufficient to arrest the hemorrhage; besides, it is easy to trepan over them, without wounding the cavity. Janson has done so to extract a ball. (*Compte rendu de l'Hotel Dieu de Lyons*, 1822, p. 47.)

3. *Over the Temples, &c.*—M. Velpeau quotes an immense variety of cases to prove that the trepan may be applied over the temples without any danger or inconvenience. The same remark applies to the danger of wounding the middle meningeal artery; hemorrhage from this vessel is rarely abundant; besides, it is easily arrested. Beclard and Dubois found no difficulty in stopping it. (*Arch. Gén. de Méd.*, t. 3, p. 377.) In two cases M. Larrey cauterized successfully with a stylet. (*Clin. Chir.*, t. i. p. 180.)

The trepan may also be applied, with proper precaution, over the occipital protuberance, and there is no point of the skull, except the base, where the use of the instrument is contra-indicated.

The third part is the most interesting portion of the thesis; and had the author possessed sufficient time to digest and arrange the quantity of matter he had collected, it would have formed a complete basis on which to form a definitive judgment. He examines successively the opinions of the most celebrated surgeons in England, Germany, and France, and endeavours to confirm, by an assemblage of facts drawn from their practice, the principles laid down by him in the second part of the thesis. This is a monument of labour and learning, and deserves to be consulted by every surgeon.

Dease, like Desault, was an antagonist of the trepan. M. Velpeau analyses the twenty-five observations contained in his work, shows the reasons by which Dease was induced to reject the operation in many cases, and explains the causes of his ill success.

Twelve were cases of contused wounds without fracture; nine died. M. Velpeau shows that all these had an inflammation either of the brain or membranes at the time of the operation, and not one had effusion of fluid; in a word, the operation was by no means indicated. The second series of cases in Dease comprises eleven wounds of the head with fracture; eight cases were trepanned and three died. And here, again, the operation was unnecessary in the majority of the cases, as eight were merely fracture of the external table.

The work of Pott, the great English advocate for the trepan, is analyzed with more care. M. Velpeau gives a concise account of twenty-eight cases detailed in that author, and shows what were the

principles which guided him in the employment of the trepan. In these twenty-eight cases Pott lost only thirteen, and M. Velpeau points out how little influence the operation had in producing the deaths.

In spite of the sage reasoning of Pott, the doctrine of Dease prevailed in England, and was more or less adopted by Abernethy, J. Bell, Sir A. Cooper, &c. Abernethy rejected the trepan in cases of fracture with slight depression, and cited observations of this kind where the accidents supervening were few or none. In answer to this doctrine, M. Velpeau remarks that the observations of Abernethy are very incompletely given; for he rarely ever mentions the depth of the depression, and refutes the objection of the danger of inflammation being produced by the trepan.

The opinions of J. Bell and A. Cooper are also submitted to a patient examination by the author. When the fracture is compound, and inflammation comes on, death (says Sir A. Cooper) is a necessary consequence, whether we trepan or not. If there be a wound with depression of the bone, it is better to elevate the fragments than apply any instrument. Sir A. Cooper says he has often met with depressions of the external table, the internal one being uninjured. He forbids dividing the dura mater if the surgeon do not find the blood between that membrane and the skull, and, finally, almost restricts the trepan to cases of compression where evacuations have failed.

We have been insensibly led to enter into a more detailed examination of the present thesis than we intended, we must, therefore, hasten to the conclusions of the author. Having analyzed the opinions of the English surgeons, M. Velpeau turns to Germany, and gives the ideas professed by Klein, Eichelmer, Chelius, Zang, Beck, Behr, Steigmann, and Kleinert, favourers of the trepan, compared with the opposite doctrines of Graefe, Lowenhardt, Speyer, Schneider, Gadermann, Jæger, and Kern.

In France the doctrines of Desault, Giraud, and Larrey, are noticed, and the arguments of Marchand, Matter, Gama, &c. against the trepan, are answered.

It is unnecessary to mention, that during this long analysis of so many works, M. Velpeau endeavours to bring together the points which refer to his question, signalizes the true indications of operation, and distinguishes those cases where the instrument was rashly applied. Finally, the thesis is abundantly rich in observations, both original and quoted. We find no less than ninety-two cases of wounds in which the trepan had been applied, and which are given with all the necessary details.

The conclusions to which M. Velpeau comes are the following:—

*Indications for the Trepan.*

1. In wounds of the head with contusion of the bone, and detachment of the pericranium and dura mater.
2. Necrosis of the thickness of the bone.
3. Simple fractures, if accompanied by violent contusion, or effusion on the dura mater.
4. Fractures, with splinters of bone, when there is not a considerable space between the fragments.
5. Fracture with depression, unless there be no symptom of compression.
6. In cases of foreign bodies where they are not too deeply fixed.
7. In effusion, whatever be its nature or seat.
8. In all cases of compression, sufficient to trouble the cerebral functions.
9. In contusion of the brain, with symptoms of suppuration or paralysis.
10. In some cases of fixed pain, &c. under a point of the skull anciently wounded.
11. For convulsions or epileptic accidents depending on the same cause.
12. For the removal of fungous tumours &c. which are developed on the dura mater after wounds of the head.

*Contre-Indications.*

1. When the contusion of the bone is slight and simple.
2. In fracture of the base of the skull, or if the injury extend there.
3. In simple uncomplicated fracture.
4. When the foreign body is lost in the brain.
5. When the effusion of blood or pus is diffused.
6. When the compression does not produce paralysis, and depends on a cause acting suddenly with its utmost energy.
7. In cases of concussion.
8. When there is general inflammation of the brain.

## *ARGUMENTATIONS*

ON THE FOREGOING

## *THESIS OF M. VELPEAU,*

(*Discussed July 26th,*)

BY MM. LISFRANC AND BERARD.

*Remarks of M. Lisfranc, and Replies of M. Velpeau.*

M. LISFRANC.—In page 91 of your thesis, speaking of the doctrines of M. Fleurens, and the manner in which compression of the brain is produced, not merely by the presence of a certain quantity of fluid in the cavity of the skull, but by the indirect influence of the osseous case, reacting on the extraneous body, you say that M. Serres (*Ann. des Hopit.*, t. 1, p. 250) has omitted to take this peculiarity into account, and hence concluded that fluids effused within the skull were incapable of producing compression, and that the trepan, in this respect, was almost useless. I think you have here fallen into an error, and attributed to M. Serres ideas which he never had. M. Serres was perfectly acquainted with the influence of the osseous skull in giving rise to compression, for he always took the precaution of closing the orifice by which he introduced the fluid, and thus placing, as far as was possible, the skull in its natural condition.

M. VELPEAU.—The observations and experiments of Serres all tend to prove that the effects of effusion into the cavity of the skull are not dangerous, and that a considerable quantity of blood may be shed between the membranes, without causing any derangement or trouble in the functions worth noticing. He attributes many of the symptoms of compression to alterations of the cerebral substance, and neglects altogether to take into consideration the reaction of the skull on the effused matter.

M. LISFRANC. (*Interrupting.*)—But I say yes; for why did he close up the opening which he made into the skull, if it were not for that object?

M. VELPEAU.—Serres closed the opening merely to prevent the issue of the fluid which he injected, not to represent the integrity of the skull, for he nowhere speaks of the resistance offered by the bones as the principal determining cause of compression. Had he done so, he would have agreed with other writers, and it would not have been necessary for M. Fleurens to refute his doctrine in the manner he has done.

M. LISFRANC, after some discussion on this point, attacked the author of the thesis for having spoken too lightly of trepanation as a surgical operation, which he says (p. 143) "presents no difficulty whatever. There are few operations in surgery more easy or more simple, and without ignorance or awkwardness the surgeon can make no mistake of consequence." I do not (pursued M. LISFRANC) regard the application of the trepan as so simple or easy an operation as you here represent it to be. While I was employed in giving lessons in operative surgery I had frequent occasion to see the trepan applied by surgeons and physicians who came to me from the provinces, and the mistakes made were much more frequent and serious than you seem to think of: for example, I have more than once seen the dura mater opened.

M. VELPEAU.—I do not say that trepanning does not require some degree of dexterity, but I maintain that it is an easy, a very easy operation. You have here no long or laborious dissection, no very important points to avoid, no arteries to take up, &c.; you have simply to divide a certain quantity of bone. As to the injury of the dura mater, a surgeon must indeed be very awkward to wound it; besides, division of that membrane is not a very grave accident; by no means to be compared with the division of a main artery or nerve, &c., in various operations on the extremities.

M. LISFRANC answered to this,—in the short, caustic, almost contemptuous manner which he so often employs—I regard injury of the dura mater as a much more severe accident than you do. M. Lisfranc then referred to the uncertainty of opinion which characterized the thesis, and to some contradictions, even, which required to be rectified: thus in one place, where fissure is spoken of, the author says, "if the fissure be large and the blood escape freely, trepanning may be deferred when the symptoms of compression are not very severe; in opposite circumstances the trepan should be applied to the exclusion of all artificial separation;" but in page 53, M. Velpeau distinguishes some cases of effusion in which the trepan is not absolutely necessary:—"Thus, when the fracture presents some slits gently separated from one another, the interval of the fragments may be increased for the moment, and the issue of the blood, if it still remain fluid, be favoured." This, said M. Lisfranc, is a manifest contradiction; in one place you say the trepan should be applied to the *exclusion* of all separation, and in a subsequent passage you recommend what you have before condemned; the words are clear.

M. VELPEAU.—In the first passage I spoke of the *permanent* separation of

fragments as practised by GIRAUD. In the second I refer to a *temporary* separation, which is quite a different thing, and say that when it is easy to separate the bones for a short time, it is better to do so than to trepan, but if it were necessary to keep the fissure open for several days, I regard it as bad practice, and would sooner trepan.

M. LISFRANC again pointed out a contradiction. In page 244, you "trepan for all effusions, wherever situated and of whatever nature;" while in page 246, you say the trepan is not indicated when the effusion of blood or pus is diffused. Now I should like to know how you distinguish or are able to tell whether an effusion of blood be diffused or circumscribed, whether pus be infiltrated or collected in an abscess. You may have an effusion covering half the hemisphere, or merely extending for six or eight lines in diameter; here are two cases which we have no means of distinguishing by the symptoms, and in general the two species of effusion are liable to be confounded by the best surgeons. I have myself seen many cases in which, were we to follow the symptoms given in books, you would have said the effusion was diffused, but on opening the body after death we found it perfectly circumscribed.

M. VELPEAU—In circumscribed effusion you have certain local symptoms connected with the point of the brain which is the seat of the injury; these are generally sufficient to show that the effusion is confined to a small space. When the fluid occupies a larger surface and is diffused, you have paralysis, &c., and all surgeons point out the difference between the two forms of effusion. With respect to the cases to which you have alluded, when a great part of an hemisphere is covered, the fluid is either laid on in a thick or a fine layer; in the latter case there is no paralysis, no compression; if the layer be thick, these symptoms of sudden compression are manifested; this shows how we can distinguish certain forms of effusion. When the fluid occupies only half an hemisphere I regard it as circumscribed, though you do not.

M. LISFRANC did not consider any effusion circumscribed unless it was collected into an abscess (foyer); besides he could not allow an effusion of fluid extending over half an hemisphere to be circumscribed.

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*Remarks of M. Berard, and Replies of M. Velpeau.*

The length to which we have already carried our report will permit us to give the remaining argumentations only very briefly indeed.

M. BERARD began by asking the candidate what symptoms distinguished fractures with depression from sanguineous tumours under the scalp (*bosses sanguins*, we did not exactly catch the word); one requires the trepan, the other not; he did not find them distinguished in the thesis.

M. VELPEAU would ask in reply whether the speaker was unable to distinguish them by the symptoms detailed; if not, let him state in what respect there was an omission or deficiency, and he should have an answer.

M. BERARD, after some remarks on the application of the trepan in cases of depression, recurred to the objection already advanced by M. Lisfranc, on the diagnosis of circumscribed and diffused effusions, which he said M. Velpeau did not distinguish in his thesis sufficiently well.

M. VELPEAU did not think he was bound to enter into these particularities, he had merely to treat the symptoms in a general manner; if he had a patient before him, it would be a different thing, then he might lay down the distinguishing symptoms.

M. BERARD opposed to this that as he had entered into the symptomatology of compression, contusion, commotion, &c., of the brain, he should have equally spoken of the distinguishing symptoms of diffused and circumscribed effusions, particularly as the treatment with regard to the trepan was so different. Besides, said M. Berard, there is a marked indecision of opinion running through your whole thesis: at one page you say one thing; a few pages further on you differ from yourself; and if we read on we soon find an opinion quite opposite; here is a proof:—in page 96 you say "Contusion of the brain is a frequent complication of wounds of the head," and you ask if the trepan may not be applied to prevent the accident which follows it (*à titre de moyen preventif*); in page 114 you recommended the trepan for contusion, when announced by a certain set of symptoms, as dull pain, &c.; and again, in page 245, you say, "we trepan in contusion of the brain, with symptoms of suppuration or paralysis." Here are three different opinions; first, the trepan to prevent accidents of contusion; second, you trepan in all cases of contusion, on account of the accident itself; third, you trepan in contusion only where there is paralysis or suppuration.

M. VELPEAU—In page 245 I spoke of contusion and the trepan in a general manner; at page 114 I say we may ask whether the trepan be proper or not when certain symptoms of contusion, such as dull pain, a sense of pressure, &c., are felt.

We need report this debate no further. It yielded nothing more which possesses interest for the English reader. We have still, however, something to add which is necessary to render our record of the concours complete,—a record which is unique of its kind in our own language, and calculated, we believe, to yield much gratification, in the perusal, to the profession on this side the channel. The day is not very distant at which we shall have to occupy with British, instead of foreign, names, reports of similar proceedings in our own metropolis. We are enabled to conclude our notice this week, by announcing that after a doubtful contest between M. VELPEAU, M. BLANDIN, and M. SANSON, the first was chosen definitively, and that

The NOMINATION of M. VELPEAU to the CHAIR of CLINICAL SURGERY took place on WEDNESDAY last, AUGUST the 6th, at five o'clock in the afternoon, M. VELPEAU having obtained SEVEN votes, and M. SANSON 5. Our notice of the concours will be *concluded in our next No.*

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## THE LANCET.

*London, Saturday, Aug.* 16, 1834.

ON Friday last a Special General Court of the Governors of CHRIST'S HOSPITAL was held, for the purpose of considering the report of the Committee which had been appointed to investigate the efficiency of the medical establishment. Although the attendance of Governors was not numerous, there was evidence of considerable excitement and dissatisfaction in the meeting. A Governor, whose name did not transpire, objected to the manner in which Dr. HUE had recently been elected, —to the secrecy with which the transaction had been conducted,—to the secret resignation of Dr. ROBERTS,—and to the secret election of his successor Dr. HUE. He therefore moved that the confirmation of the minutes relative to the election should be adjourned to the next court-day. On the motion being put from the chair, there were—

In its favour - - 24
Against it - - - 25

Thus the minutes were received and confirmed by a majority of 1. The *Almoners* having all voted with the majority, the numbers displayed on this occasion exhibited the triumphant progress of the liberal cause in this mismanaged establishment. Accordingly, a resolution was entered on the minutes, that all the vacancies which may hereafter occur in the medical department, should be made known by public advertisement. The report of the Committee was then brought up, wherein it was recommended, on the evidence of medical practitioners who were *un*connected with Christ's Hospital, that the *diet*-regulations should be revised,—that the mode of serving up the food should be altered,—and that the table should be constantly replenished with a supply of fresh vegetables. It was also recommended that the managing Governors should no longer be appointed for life, but that *all* the Governors should take a share in the house government, in rotation.

Should the recommendations of the Committee be all carried into effect, the alterations will be alike beneficial and important. The existence of the ring-worm in such an aggravated form as to have interfered with the education of the children for years, is a disgrace to the medical character of the charity, but it is an evil that might have been anticipated from the manner in which the medical officers of the establishment have been elected. Who is Dr. HUE, that he should be deemed qualified to superintend the medical management of twelve hundred children? Why, he already holds the office of physician in St. Bartholomew's Hospital, where he is also lecturer on the practice of medi-

cine, and on one, if not two, other distinct branches of medical science. Is it to be expected that a man thus engaged can for the miserable sum of 70*l.* or 100*l.* a-year discharge his duty to the children of the establishment? Besides, has he shown that he possesses a single qualification for the office into which he has lately been installed? True, he has long held the office of physician in St. Bartholomew's Hospital, but during that protracted period, what have been his contributions to the stock of medical knowledge? True, he is a lecturer on the practice of medicine, but it is not difficult to read imperfectly discourses which have been cleverly written by other parties. It is well known that many of our lecturers ought to be ranked with our bell-sounding street-criers, who merely drawl out, in discordant accents, words and sentences which have been constructed by the individuals by whom they are hired. If the office of physician to Christ's Hospital had been open to competition—had been exposed as a prize to opponency,—who will be sufficiently bold to assert that Dr. CLEMENT HUE,—the veteran medical pluralist,—would have been the successful candidate? Although we have enumerated four or five of the important places which this one Fellow of the College of Physicians professes to occupy, there are, we believe, yet two others which he claims as his own. We have been informed that he is one of the Physicians of the Foundling Hospital, and it is an undoubted fact, that he is the Registrar of the Government Vaccine Board,—a profitable, though by no means a laborious station, which he has occupied at the recommendation of his brother-Fellow, the eel-backed Baronet.

Is not CLEMENT HUE a thriving fellow, and are not the Governors of Christ's Hospital, who chose him as physician to that establishment, singularly ingenious fellows? Sympathising with the poor children in their sufferings, they determined on selecting a physician whose skill and whose leisure might afford him the best opportunities for relieving them from the diseases under which they labour. Accordingly, with a degree of ingenuity quite equal to the warmth of their benevolent feelings, those Governors made choice of a physician whose reputation for the cure of infantile diseases had yet to be established, but whose time was so fully occupied, that there was scarcely an hour left him to devote to such a purpose. But we dare swear that the House Committee, and CLEMENT HUE to boot, will protest that the devastating ringworm, being *obviously* a complaint of the skin, has no source deeper than that of the tegumental covering of the body; that it is the business of the surgeons of the establishment to attend to the *external* complaints of the children, and that the physician has no further duty to execute than to supply the alimentary canal with occasional doses of salts, rhubarb, and magnesia. What may be the opinion of the doctor concerning dietetics we know not, and are willing to confess that it is a matter of trivial importance, but the House Committee, who have adopted this sage medical pluralist as their deified Esculapius, have, on certain days of the week, fed the children on beef boiled to rags, and mutton roasted to cinders,—on others, cramming them with stuff called peas and plum-pudding, and bread besmeared with salt butter, adding an occasional regalement of soup in the form of nauseating "pot-liquor." The excuse for boiling and broiling the meat until it is juiceless, is this,—that as the lads have no plates, but merely flat square pieces of wood, whereon to eat their meat, there is no receptacle for the gravy, and that if it were left in the meat, it would escape at the dinner-table and make a mess! With such a dietary, it is not surprising that the chil-

dren should suffer from the ravages of the ring-worm, or of any other direful malady; a source of astonishment is rather presented, in the fact, that every child in the establishment is not the victim of disease. However, let us hope that the contemplated improvements will be carried into effect. But will the beneficial changes be lasting? The public have no security against a recurrence of every one of the pernicious practices with respect to domestic management and diet. We suppose the present medical officers are *fixed* in their position, and that Dr. CLEMENT HUE will be allowed to claim Christ's Hospital as his sixth emblem of dignity and patronage. Without questioning the motives of those Governors who have been instrumental in promoting a reform in the affairs of Christ's Hospital, we may be permitted to remark, that the control of such establishments ought not to be consigned to that caprice of mind which may be consequent on changes of office, but that the leading principles of government should be laid down by the strict and binding injunctions of the legislature. As there is a permanency of wealth, so ought there to be permanency of principle in the appropriation of those funds to all the beneficent objects contemplated by the founders of the charity. A power sufficient to ensure a *just* management of the property may be found, possibly, by ensuring publicity to the proceedings of every Court and Committee of Governors; at the same time it is quite certain that the health of the children would be best secured by subjecting the medical officers to the inspection and control of the president, or vice-president, or some other high functionary attached to a NATIONAL FACULTY OF MEDICINE.

If the lay governors attached to our public charitable institutions could but be made aware of a thousandth part of the mischief which springs out of their interference in medical affairs, they would be induced to abandon, with dismay, an avocation which, unfortunately for the public, is now followed with misplaced zeal. If the great medical charities are public institutions, why, we ask, are the whole of the proceedings connected with them conducted in *private?* If, further, it is intended, by instituting such establishments, to secure the best possible medical treatment of persons who are incapable of purchasing medicines and medical skill, why, we inquire, is not the medical government of such charities lodged in the hands of the highest and most competent medical authorities? It may be useless at this time to offer any further animadversions on the conduct either of the House Committee of Christ's Hospital, or the medical officers of that establishment, for it is quite clear that the government of that and all other similar institutions must be subjected to the scrutinizing revision and control of the legislature. The public certainly would not sanction any unjust intermeddling with the bequests made for benevolent purposes by private individuals; on the contrary, a legislative interference, having for its object the ensuring and extending of the benefits which the donors may meditate, would ever elicit the plaudits of an enlightened community. If, for instance, a man were to leave a sum of money to a public dispensary, and it were to be proved, beyond the possibility of suspicion, that the institution was productive of mischief rather than of benefit, the legislature would be justified in transferring the property to an endowed hospital, where those advantages would result from a proper application of the funds, which the donor expected would happen from the bestowal of the fruits of his benevolence in the "dispensary." Circumstances of this kind prove the folly of attempting to mark out arbitrary rules of conduct in transactions of a public nature.

The chain that connects events must be tightened or loosened to suit the accidents of life. It is alleged, we well know, by many eminent legal authorities, that the legislature has "*no right*" to add to the funds of one institution, property which has been bequeathed to another. The term "right" is not employed correctly, with reference to such transactions. Who denies the *right* of the legislature—when the interests of the community require such a measure—to decree that the privileges connected with private possession should be rendered subservient to the commands of public utility? If an estate lie in the course allotted to a canal or a rail-road, can it be denied that the legislature has an undoubted right to cut through the land, by the instrumentality of an Act of Parliament, making, of course, to the proprietor, what is deemed, by impartial judges, a due compensation? Let it not be alleged, then, that when the *public* property of the country is misapplied, the legislature would not be justified in making a new disposal of that property,—ever, of course, in harmony with the declared objects of the donors.

Often has it fallen to our lot to direct the public attention to the evils that have arisen from the institution of dispensaries, and from the mismanagement of our hospitals and infirmaries. Repeatedly and strongly have we exclaimed against the monopolies of our medical colleges and companies, and on almost numberless occasions have we condemned the imperfect arrangements relating to medical students in the endowed charities of this metropolis. The allegations so frequently made in this Journal have at last received a full verification before one of the first authorities in the kingdom. It is time, then, to prepare the public mind for a change which *must* be effected. The name of "CHARITY" must no longer be allied with the practices of hypocrites, neithe must an odious traffic in human suffering be shielded from public odium under the imposing name of "SCIENCE." If the funds of the hospitals have been perverted to improper purposes, it is right that the Legislature should interfere to prevent a recurrence of the evil. If the conductors of the medical colleges have sought to promote their own interests at the expense of the prerogatives of the profession, it is the duty of Parliament to protect an immense body of useful men from the designs of parties who have no incentives to action but such as spring from the hope of personal aggrandizement. If it can be proved that the "dispensaries" are public nuisances, they must be swept away from the highways and by-ways of the community. If, then, amongst other changes, the medical department of Christ's Hospital, and other similar institutions, should at no distant period be placed by the Legislature under the control of the authority of a NATIONAL FACULTY OF MEDICINE, let not those governors who may object to the alteration be sufficiently prejudiced to consider that the alteration will be an unnecessary one, or so blind as not to perceive that it would be productive of immense advantage.

Part of the foregoing article has been penned with reference to the evidence which has been elicited before the Parliamentary Medical Committee, and with reference to what it is probable will be the tendency of some legislative measure which will be founded thereon. The sittings of the Committee terminated for the session on Wednesday last. It will be recollected that, on the commencement of the inquiry in March, when some impatience was manifested by one of the witnesses—a friend of Sir HENRY HALFORD,—Mr. WARBURTON jocularly remarked:—"Don't hurry yourself—don't hurry yourself, plenty of time between this and August;" and, strange enough,

the Committee was sitting so late as the 13th of August—the investigation having thus extended through nearly five months. The conduct of Mr. WARBURTON has surpassed any eulogium that could be bestowed on it. He has prosecuted the inquiry with extraordinary industry, integrity, and talent. It is impossible, however, that the profession can be aware of the extent of their obligation to that gentleman, or can appreciate the value of his services, until the report of the Committee shall be laid before Parliament.

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THE COUNTY CORONER'S BILL has no longer an existence as a legislatorial measure. The death-blow was not struck for its faults, but for its partial emendation. The history of the bill, since we last noticed its progress, may be briefly told. Having passed the House of Commons, gone through the House of Lords, and re-entered the House in which the bill originated, a difference of opinion was declared on the clause by which the Coroner's Court was constituted an open institution. The Lower House was favourable to publicity at inquests, without limitation. The Upper insisted that the Coroner should have the power (at present often exerted, but frequently disputed) of excluding therefrom all persons not officially engaged in the execution of its duties, or under examination. Each House refused (at a conference) to yield to the wishes of the other, and the Bill came to a fatal termination, on the motion of Mr. WARBURTON, made on Wednesday night last, that the reasons urged by the Lords, at the conference, for insisting on the exclusive powers of the Coroner, should be taken into consideration by the House of Commons on that day three months. This motion (put as an amendment to a motion of Mr. CRIPPS, that the House of Commons do not persist in its disagreement from the determination of their Lordships on the subject) was agreed to without a division. Lord ALTHORP approved of Mr. WARBURTON'S amendment. The House could hardly fail to see that the measure was a mass of absurdities, and that the question had better be considered after Parliament had become somewhat enlightened on the subject of medical legislation, by the perusal of the evidence taken before the Medical Committee which has just closed its sittings.

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THE MEDICAL COMMITTEE.—On Wednesday afternoon last, at the second assembling of the House of Commons, Mr. WARBURTON brought up the report of the select Commitee on medical education and practice. The Committee had concluded its sittings only a few hours previous to the presentation of the report, which was ordered to be printed forthwith.

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ST. GEORGE'S HOSPITAL.—MR. WALKER AND MR. BRODIE.—We have received a letter from *A Governor of St. George's Hospital*, from which we extract the following statement relative to the above-named functionaries of the Hospital. Mr. Brodie's power of jobbing at that institution is near its end:—Some uncharitable hints were thrown out by Mr. Brodie, during the late disreputable proceedings at St. George's against Mr. Walker, with a view probably to prejudice the governors against Mr. W. That gentleman accordingly brought the matter before the board on the 2nd of July, by means of the following resolution, the medical and surgical officers of the Hospital being present at its proposal. He prefaced it by remarking, that Mr. Brodie, without making any definite charge, did at a full meeting of the governors on the 27th ult. insinuate, that it was in his power to bring forward circumstances unfavourable to his (Mr. Walker's) character, in reference to the mode in which he had performed his duties as assistant-surgeon, and as Mr. Brodie, when interrogated on the subject by one or two governors, did not deny, but in the minds of many rather affirmed his power of making good his threat; he therefore moved, —"That a committee of not less than six governors be formed to investigate these allegations and report the result to the next weekly board, and that none of the officers of the establishment, or the requisitionists, form part of this committee."—This resolution having been seconded and put from the chair, Mr. Brodie came forward, and with an abashed air, entreated that the governors would hear him in ex-

planation. Nothing, he said, was further from his thoughts than the charging of Mr. Walker with any neglect of duty. On the contrary, he felt assured that the out-patients were well taken care of, and that when he left his in-patients under the care of the assistant-surgeon (which he was in the habit of doing for two months at a time) he had always found them carefully and skilfully attended to. The faults to which he alluded were these, that "the house-surgeon frequently saw the out-patients, and that a woman had called upon him and stated that she had been an out-patient since April last, and had never seen Mr. Walker. He concluded his remarks by informing the board that Mr. Walker had refused to take in patients for the senior surgeon (Mr. Keate), declaring that he had received no order to that effect from Mr. Keate, and had not time to take them in." The reply to these statements was most satisfactory, and accordingly the following amendment to the resolution was moved by Mr. Nussey and seconded by Dr. Wilson:—"That Mr. Brodie having disavowed any intention of charging Mr. Walker with dereliction of duty, and the board being thoroughly satisfied with the services rendered to the hospital by Mr. Walker, do proceed to the order of the day." This amendment was immediately carried unanimously."

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ST. GEORGE'S HOSPITAL. WASHING THE WARDS.—Our reporter has forwarded to us the following note:—"The statement which I made relative to Mr. Brodie's remarks on the washing of the wards is perfectly correct. They occurred in a conversation between the house-surgeon and Mr. Brodie at the bedside of a patient at the further extremity and on the right-hand side of Oxford ward. Many pupils were present at the time. The constant occurrence of erysipelas when 'the pernicious practice' of washing a ward or any part of it is adopted, with the comparative freedom from the disease when the system of dry-rubbing the floors is adopted, are circumstances which will, I am sure, be quite sufficient to induce the worthy chaplain to use his authority in prohibiting the practice."

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CAUTION.—A correspondent residing at Lichfield requests us to caution the profession and the public against an itinerant "Lecturer on Medical Jurisprudence" who is at present on his travels in the country. He carries with him printed certificates of high moral character and qualifications, signed by Mr. Guthrie of London, Dr. Knight of Stafford, and others, but has, on one occasion at least, mentioned to us by our correspondent, obtained and retained money in a manner which has not been in character with the testimonials he exhibits, and left the town without paying his tavern bill.

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## CORRESPONDENTS.

Many articles which are in type, and which were intended for insertion this week, are, in consequence of the length of our report of the Parisian Concours, unavoidably postponed until room for them is afforded by the publication of another number. We have especially to apologize to *Mr. Shepherd* for again being compelled to omit his answers to Mr. Paul and Mr. Hunter.

The letter of *Mr. Davies* reached us too late to be noticed this week.

The communications of *Mr. Wilkinson*, *Dr. Clanny*, *Mr. Batten*, *Dr. Nicholas*, *Mr. Gilmour*, *Mr. Molloy*, and *Mr. Richard S——*, have been received.

The report relative to Dr. ABEL STUART, the Antigua quack, has come to hand.

*Note dated "Finsbury, August* 11."—Our correspondent ought to inquire at the Hall. The changes directed in the regulations at that establishment have been too frequent, and founded too little on any principle, to permit us to answer his questions with satisfaction. The mandates of the Court issued at the commencement of the last annual medical session, may be found in our No. for Sept. 28, 1833.

The points alluded to in the letter of *Liber* have, most of them, we think, been thoroughly discussed. The proposition relative to the premiums taken with medical apprentices had better be made after the enactment of those new laws which will place medical education on a sound basis, when it will obtain more attention than it is likely to do at the present moment.

*A Friend to Philanthropy* must forward his name and address (confidentially), and a reference to some gentleman who can further authenticate the statement respecting Dr. B., if our correspondent were not himself the party who called at Dr. B.'s house; after which the statement shall be, as it ought to be, made public. The transaction at present has no date attached to it.

NOTICE.—It is particularly requested that ALL letters of business forwarded to the Office of THE LANCET,—whether they relate to the contents of the journal, or refer to transactions connected with the Commission Department,—be INVARIABLY addressed to THE EDITOR—Mr. WAKLEY. If this rule be not observed, it is impossible to guard against the impositions of anonymous scribblers who appear to have no other employment or pleasure than that of subjecting the conductors of journals to a heavy extortion in the shape of post-tax. If all letters of business transmitted to the office be addressed to the Editor, and NO letters, unless so addressed, be received except the postage be paid, impositions will be effectually prevented.

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ERRATUM.—The address attached to the letter of Mr. Cheyne, page 701, should have been *Frances Street, Tottenham Court Road.*